JANUARY 1957

ARMY INFORMATION DIGEST

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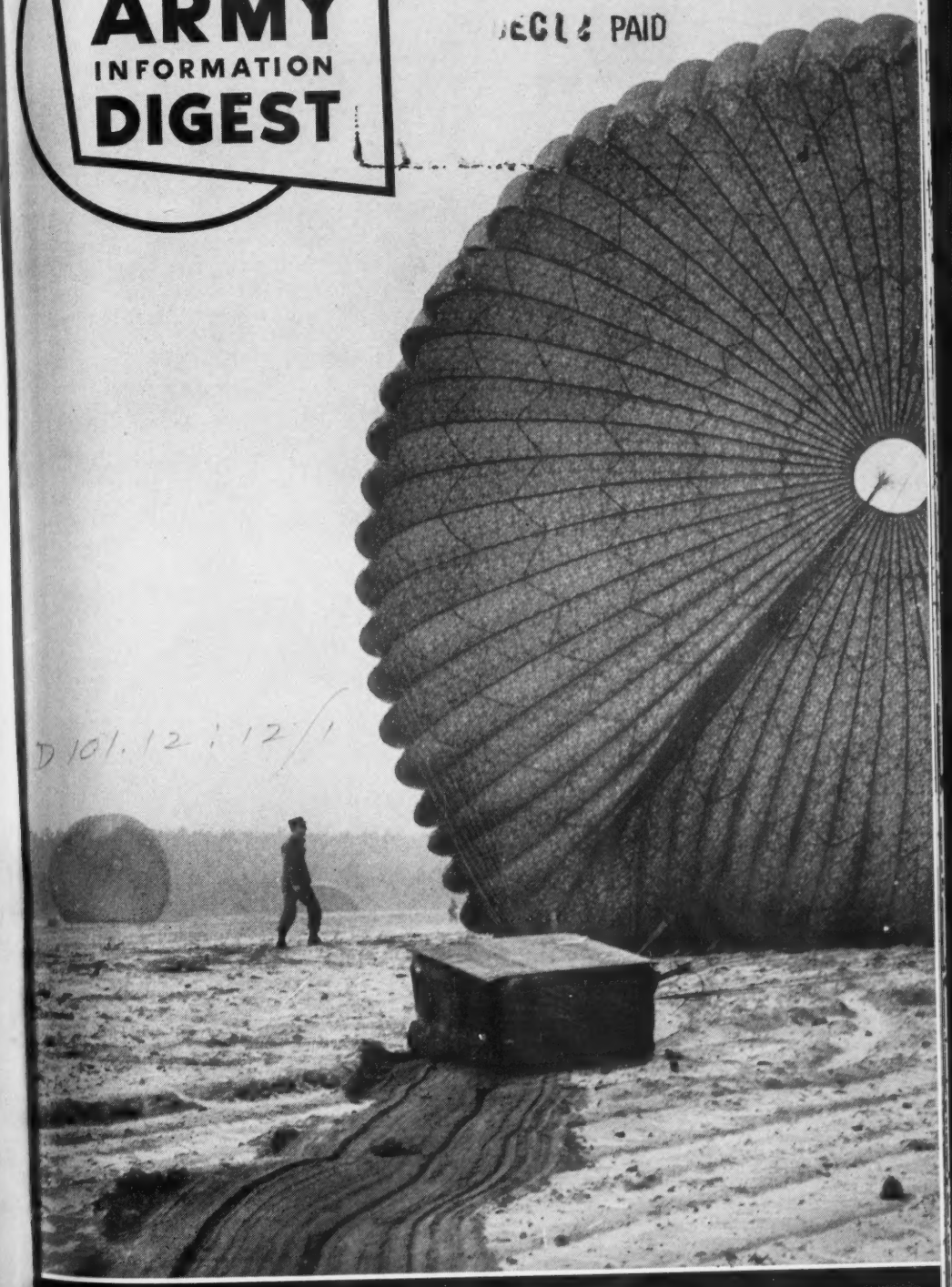

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THE OFFICIAL U. S. ARMY MAGAZINE

ARMY INFORMATION DIGEST

THE OFFICIAL MAGAZINE of the DEPARTMENT OF THE ARMY

The mission of ARMY INFORMATION DIGEST is to keep personnel of the Army aware of trends and developments of professional concern.

THE DIGEST is published under supervision of the Army Chief of Information to provide timely and authoritative information on policies, plans, operations, and technical developments of the Department of the Army to the active Army, National Guard, and Army Reserve. It also serves as a vehicle for timely expression of the views of the Secretary of the Army and the Chief of Staff and assists in the achievement of information objectives of the Army.

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Publication approved by Director, Bureau of the Budget, 20 May 1954.

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LAND, SEA AND SKY are the arterial highways of global defense. The Army's concern with logistical problems world-wide is reflected in three articles—"Strategic Mobility," "Terminal Command Concept," and "Delivering the Goods to USAREUR" in this issue. End point of a long supply chain is depicted on the front cover, where a ton of skyborne freight arrives to reinforce infantrymen in a recent training exercise.

PICTURE CREDITS: All illustrations are U. S. Army photographs, except U. S. Air Force, Cover I, p. 5; Stroukoff Aircraft, pp. 8, 11; University of California, p. 18. Art work by Pfc Sheldon Starkman.

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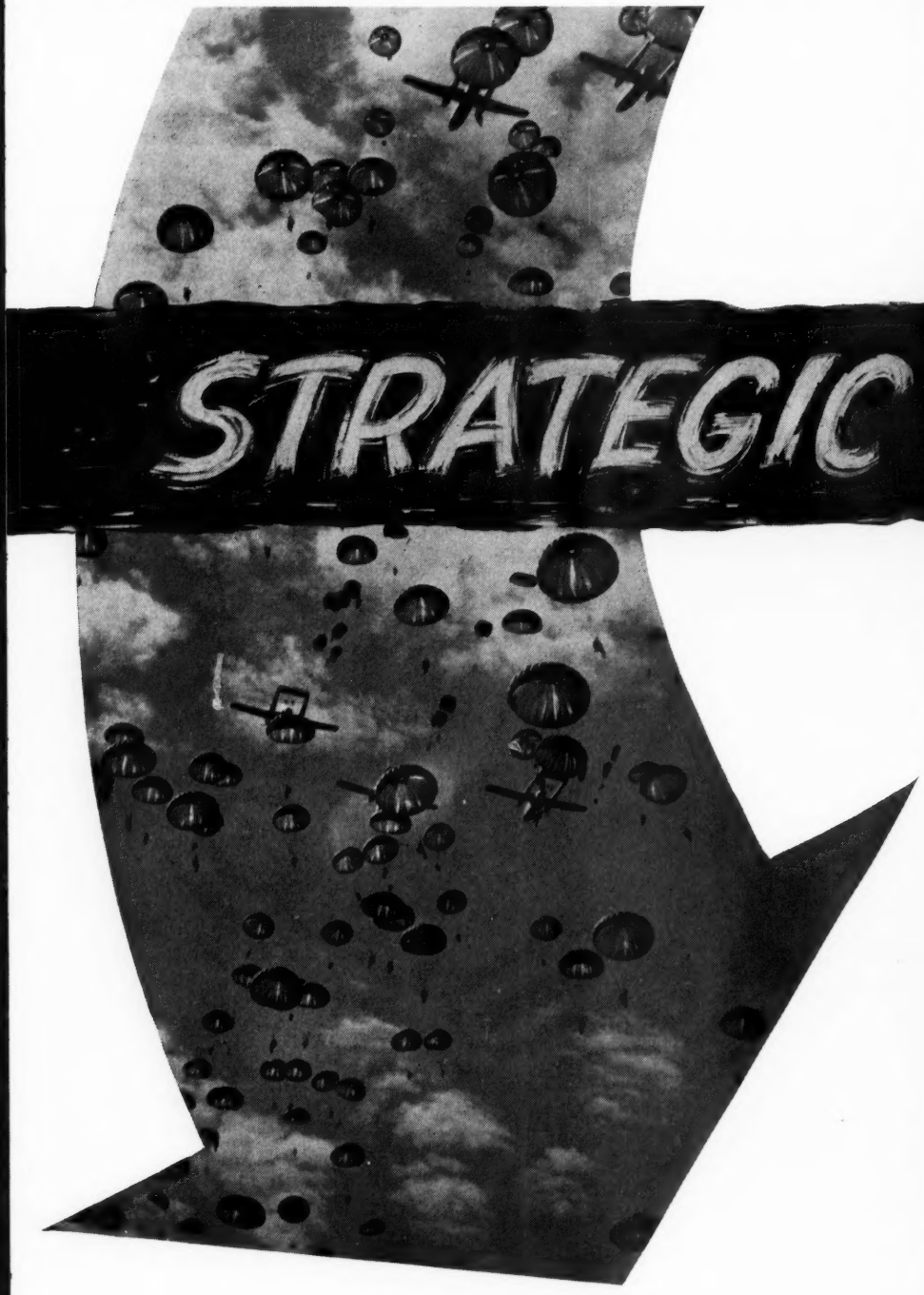
Our deterrent capability for heading off local wars and our ability to win a general war depends in large measure on



Major General Earle G. Wheeler

THE WORD "mobility" has varied meanings to military men depending on their particular branch of service, background, and personal experience. To a Navy man it brings to mind a picture of great convoys of vessels steaming from one continent to another; to the Air Force pilot, formations of cargo or bomber aircraft flying high above the earth. The soldier, on the other hand, may fall into the error of thinking of mobility merely as riding a truck instead of marching.

Strategic mobility, basically, is *getting there*—getting to where you want to fight, in shape to fight.

In today's military climate, strategic mobility could be a deciding factor in determining whether or not military action to counter local war evolves into a general war. The purpose of this article is to describe strategic mobility through the Army's eyes, point out what it means, and discuss its present and future effect on land warfare.

NORMALLY the commander thinks of strategic mobility as the

MAJOR GENERAL EARLE G. WHEELER is Director of Plans, Office of the Deputy Chief of Staff for Military Operations, Department of the Army.

"In today's Army all the equipment of infantry and airborne divisions is air transportable, with exception of tanks and some engineer heavy equipment."

ability to move forces from theater to theater as contrasted with *tactical* mobility which involves the ability to shift striking power on the battlefield or between adjacent areas of combat. In a war of the future, however, as the depth and breadth of the battlefield reaches great distances, and a variety of improved weapons and mobility systems is made available to commanders, the dividing line between strategic and tactical mobility may become more and more tenuous.

Strategic mobility for the Army is attained by means of sealift and airlift. Airlift may be enhanced in the future by an improved technique permitting aircraft to land on rivers, lakes, canals and hastily prepared surfaces, thus eliminating the need for conventional airfields as we know them today. Such aircraft are known as "panto-base," from the Greek *pan,* meaning all.

From the standpoint of sealift to meet Army strategic requirements, present estimates show that the Navy and the Merchant Marine can make available to the Army sufficient sealift capability to satisfy its needs; and since about three-fourths of the earth's surface is water, this will continue to be an important means of providing strategic mobility. Certain improvements are needed, of course, in cruising speed of cargo ships and in methods of cargo loading and unloading to improve the overall mobility of sealift.

The strategic airlift question, on the other hand, is not as clearly defined or as easy to solve. Accordingly, the remainder of the discussion is concentrated on this latter phase of strategic mobility.

WHY does the Army need an air mobility capability? What enemy threats or courses of action support this requirement?

Since 1942, the Soviet bloc by annexation, subversion, intimidation, civil strife and conquest has taken over five million square miles of territory and over 600 million people who formerly were free. In addition, during the same period Soviet-controlled Communism has attacked or made threatening gestures toward Malaya, Greece, Iran, South Korea, Thailand, and even Guatemala.

It is significant that in thus gaining control over one-sixth of the

world's people and one-tenth of the earth's surface, the dominant military forces in every instance of Communist armed aggression have been land forces, either conventional or irregular. In every case where Communist aggression has been resisted successfully, it has been non-Communist land forces that have played the predominant role. And the most significant feature of all is that these conquests have been made in the face of United States atomic superiority, without the threat or use of atomic weapons on the part of the Communists or the United States.

Finally, as we visualize the future development of thermonuclear weapons of greater and greater destructive ability, the logical conclusion presents itself that it would be highly unlikely for any political leader to initiate an atomic war in which either side had the capability of completely destroying the other. Instead, it would be much more practical to acquire territory by subversion and political aggression and by engaging in military conflict short of general war. In such conflicts there may be limited opportunities to use atomic weapons.

To summarize the threat—

¶ The USSR shows absolutely no indication of abandoning its attempt to Communize and dominate the world; and

¶ Its method of accomplishing this domination will probably be by subversion and intimidation, and by local war or military conflict short of general war as opposed to all-out atomic war.

THE ARMY is ideally suited to meet this local war threat and to defeat it. Air mobility will permit the assembly and deployment of land forces so that their discriminating power can be applied swiftly and decisively.

If provided with the suitable strategic airlift, the Army could rapidly move elements of its strategic reserve from the continental United States to a threatened area on short notice. Visible evidence of United States troops on the ground ready to fight would be the strongest counter to local ag-

". . . Air transport is necessary to put the forces on the ground in combat formation before the situation gets out of hand."

gression which the Free World could provide.

The only alternative to providing highly mobile ground forces ready to deploy rapidly to potential trouble spots would be to position these forces at numerous locations world-wide. In the latter case, the extent of military effort required would be prohibitive from an economic viewpoint, and contrary to the military policy of the United States and its allies. The solution, therefore, is to make sure the Army has the strategic mobility required.

Visualize, for example, the changed battle situation which might have developed if at the beginning of the Korean War there had been sufficient airlift to move a corps force from the United States to Korea. An early and probably decisive offensive could have been mounted as contrasted to the slow, costly defensive which cost thousands of American and Allied lives.

WHAT type of force does the Army plan to move into a threatened area by air? What does it weigh? Is the equipment air-transportable? How many aircraft will it take to move the outfit?

The size of the unit would naturally depend on the particular military situation. However, the Army is thinking in terms of a corps force composed of one, two or even three divisions.

In today's Army all the equipment of infantry and airborne divisions is air transportable, with the exception of tanks and engineer heavy equipment. The number of airplanes required to move the force is naturally a function of the time in which it is desired to complete the movement. If no pressing time factor is involved, a small group of aircraft could move one echelon and shuttle back and forth, picking up other elements until the movement was completed. However, air transport is necessary to put the forces on the ground in combat formation before the situation gets out of hand.

Today, combat echelons of the infantry or airborne division weigh approximately 5000 tons. This includes division headquarters, the infantry regiments, supporting artillery, engineers, and elements of quartermaster, ordnance, and other necessary support elements.

Air Force and Navy aircraft available to transport these troops consist of several types of airplanes, varying in individual capacity from the C-54 (about six tons) to the C-124 (about seventeen tons). These are tonnages which the aircraft can carry on a Pacific run which has a "critical leg" of 2200 miles—the critical leg being the longest hop which an aircraft must make before refueling.

Thus, if 300 C-124s were available, they could fly the combat echelon of one division (5000 tons) to the vicinity of Tokyo, or to the island of Taiwan, in about 10 or 12 days. This division would, of course, need supplies and logistical support in order to fight. In other words, the combat echelons of this division are not self-sustaining and would have to be backed up by a base of some sort.

ASSUME that a situation arises in Southeast Asia in which the United States decides to send a two-division force from the United States with the mission of aiding our Southeast Asia Treaty Organi-

zation (SEATO) allies in blocking and defeating a Communist attack in that area.

First consideration in such a movement is the capability of airfields at the terminal point to handle the aircraft as they are phased into the area. The first elements to arrive would be Air Force control parties to establish communications and control the flow of traffic into and out of the landing area. If there is no established United States base in the area, much of the initial airlift tonnage would be taken up with service-type personnel and supplies. A sufficient level of supply must be flown in, as well as service troops to handle these supplies, before any extended operation could be undertaken.

Corps headquarters and elements of an Army signal battalion would be in an early echelon. Should airfields require improvement and maintenance, Engineer troops would be included in these early elements. Since movement of the combat forces away from the airfield areas would be an important initial step, Transportation Corps personnel would be needed to make full use of existing local transportation.

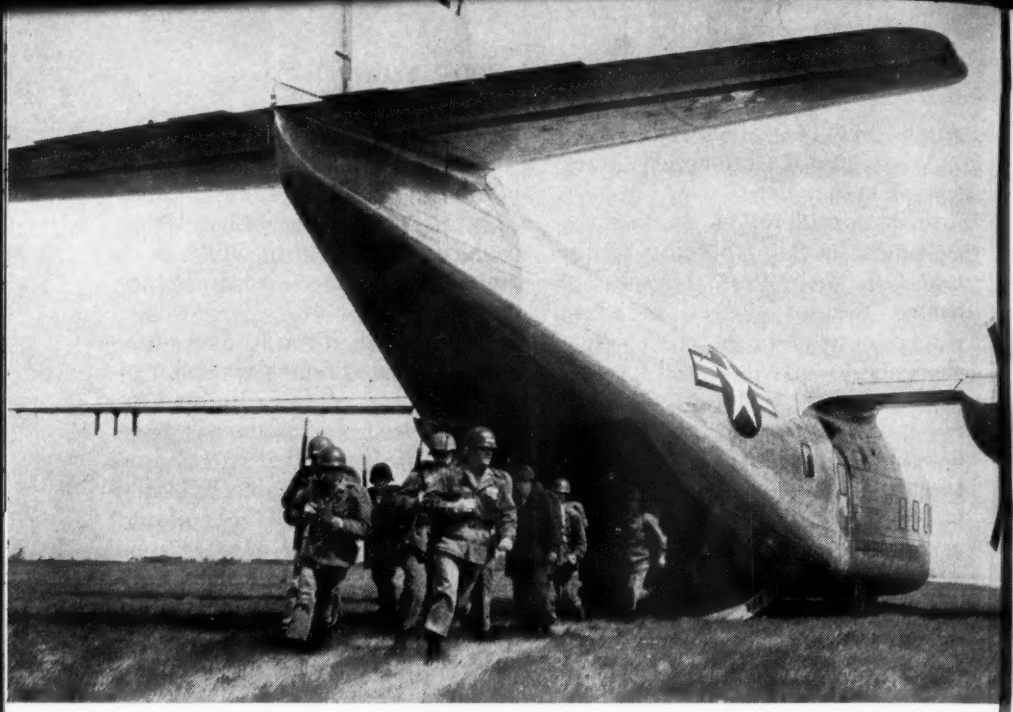
With all these factors in mind, it is easy to understand how a corps force of this type would weigh in the neighborhood of 25 to 30 thousand tons. Such a force requires a considerable airlift to move it over long distances and to put it on the ground rapidly and efficiently in such condition that it is immediately ready for battle.

So far, our discussion has dealt with strategic airlift only, or long-range movement of troops and supplies, primarily between theaters or over oceans. In order to clarify the difference between strategic mobility and tactical mobility, let us visualize a situation in which both strategic and tactical airlift are employed.

Assume that in the former situation, the strategic air movement of a corps force of two divisions to the Southeast Asia area has been accomplished, and that an airborne assault against an objective 100 miles in the enemy's rear would blunt his attack. The aircraft to be employed for this airborne assault operation would be smaller than the over-ocean transport types. They would be suitable for parachute operations and for follow-up landings on hastily constructed or unimproved airfields.

Current types are the C-119, which carries 42 parachutists, and the C-123, which has an equal capability of dropping parachutists, but is especially designed to land on unimproved airfields. Thus, Army units are moved overseas by means of strategic airlift, and tactical airlift is then employed in a shorter range operation to throw the enemy off balance and defeat him quickly and decisively.

HOW WILL the Army employ air mobility in a general war of the future? Actually, the pattern will be much the same as that just outlined in case of a local aggression. However, since the battlefield will be much greater in depth and breadth, and since there will be considerable dispersion of battle groups in loose formations to avoid presenting good targets for atomic weapons, the differentiation between strategic and tactical mo-



Demonstrating aerial mobility of fire power, fully equipped troops deploy swiftly from a C-123 transport.

bility will not be so marked as heretofore.

Once our units have been airlifted to the combat theater, long-range airborne operations would be undertaken, not of 100 miles, but probably of 500 to 1000 miles behind the enemy's most advanced forces. Even if the opposing forces should delay or limit the use of atomic weapons, the threat of their employment would be ever-present and would dictate the use of battle groups of all arms which are highly mobile and capable of operating semi-independently on a fluid battlefield.

The ground force commander, employing all available weapons under his command, will attack the objective area with surface-to-surface missiles of far greater ranges than those existing at present. (See "Missiles on the Firing Line," December 1956 DIGEST.)

Having employed these missiles to neutralize the landing zones, he will use the tactical strength of his airborne assault elements, protected and supported by Air Force fighter-bombers, to seize the objective area. He can then follow up with large air-landed forces to reinforce the troops already in the area and thus strike a decisive blow at the enemy.

Within the Army's own organic aviation will be means of conducting reconnaissance, including reconnaissance in force, by helicopter-borne troops or by troops in fixed-wing aircraft. These aerial patrols will be in the nature of a cavalry of the sky, and will be an essential element in the commander's short-range control of the situation. Thus, in a war of the future, the Army visualizes the continually increasing use of air mobility to outmaneuver the enemy on land and

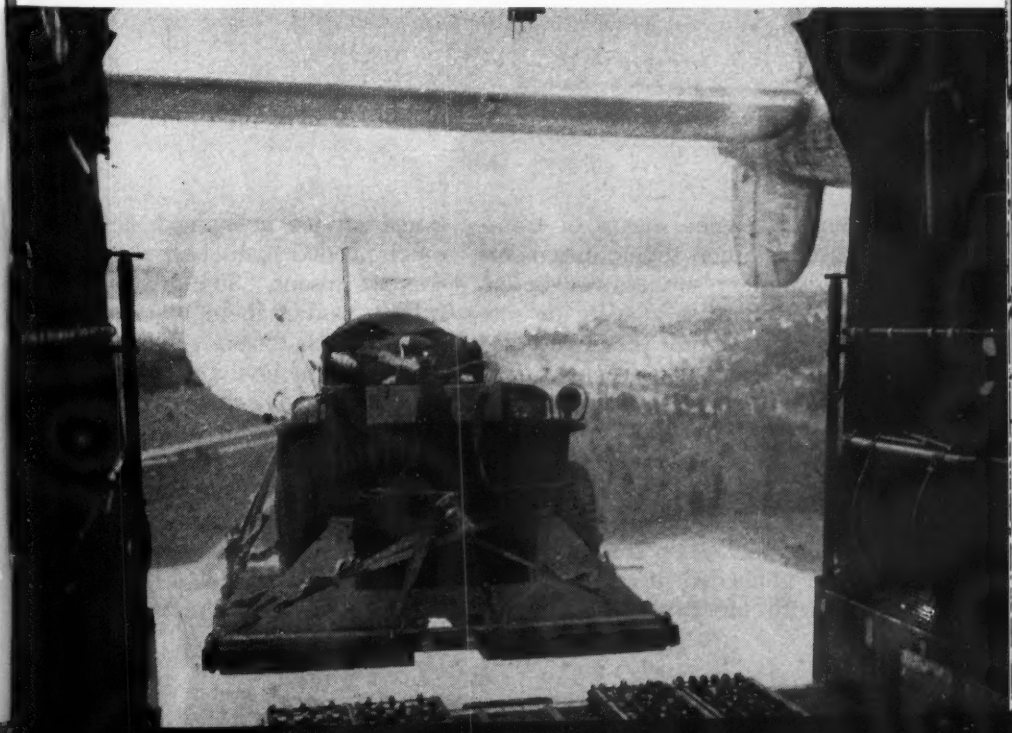
seize areas essential to his war-making power.

WHAT IS the source of the airlift which would be available to the Army, and how does the Army obtain this transportation? First, there are the passenger and cargo aircraft of the Navy and Air Force in the Military Air Transport Service (MATS); in addition, there are the aircraft of the Tactical Air Command—C-119s, C-123s, and C-124s. Finally, from the civil aviation industry, there are four-engine transport aircraft formed in an organization known as the Civil Reserve Air Fleet. These latter aircraft can be made available in an emergency to be integrated with and to supplement the capability of MATS.

Considering the numbers of aircraft which these organizations represent, it would appear that there ought to be enough airlift for everybody. However, as a Congressional hearing on this subject recently brought out, in time of actual emergency there would be considerable competition as each service sought to obtain the airlift which it considered absolutely necessary to enable it to accomplish its mission.

The Army estimates that it could reasonably count on having available enough strategic airlift to move rapidly the combat echelon of one division (5000 tons) to a threatened area. But this is not sufficient to cope with the local aggression situations which may well arise from time to time. Obviously, the Army

Specially designed platforms allow safe aerial delivery of materiel such as this jeep and even larger items.



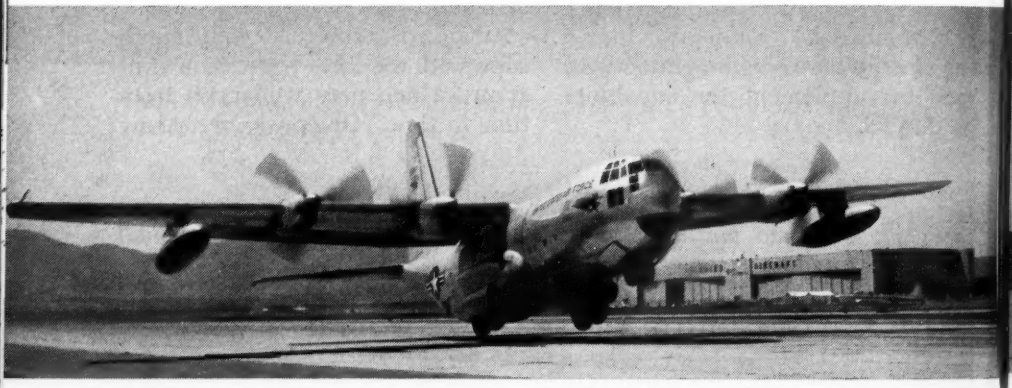
cannot count on moving into an area with established United States bases and logistic and support facilities. On the contrary, there is a more likely probability that we would have to move a sizable force to an undeveloped area in which initially we would be almost entirely dependent upon the resources brought in by airlift. Sound military planning demands that plans be based on the real possibilities which could confront us, rather than on the ideal situation.

INCREASINGLY, airlift is becoming a routine means of transportation. Since the requirements for all military services can be expected to increase at a steady rate for the next several years, and also the civil airlift requirements will continue to increase, the question arises as to what can be done to increase the total airlift capacity of the military and civil air fleets.

From the military standpoint, greater emphasis on transport type aircraft is needed in order to keep pace with other elements of the military structure. More airplanes are needed which can carry greater loads over longer ranges so that reliance upon enroute bases can be reduced and more tonnage carried in a shorter period of time.

Aircraft have been developed along these lines, but their production has been proceeding at a rather slow pace. Replacing present transport aircraft with new types will provide a sizable increase in capacity of the military fleet.

During the early days of the Korean War, certain civilian aircraft performed an outstanding national service in flying a new and much-needed Army bazooka to our combat troops. Similarly, in any future conflict there will continue to be a need for emergency supply operations by civil aircraft.

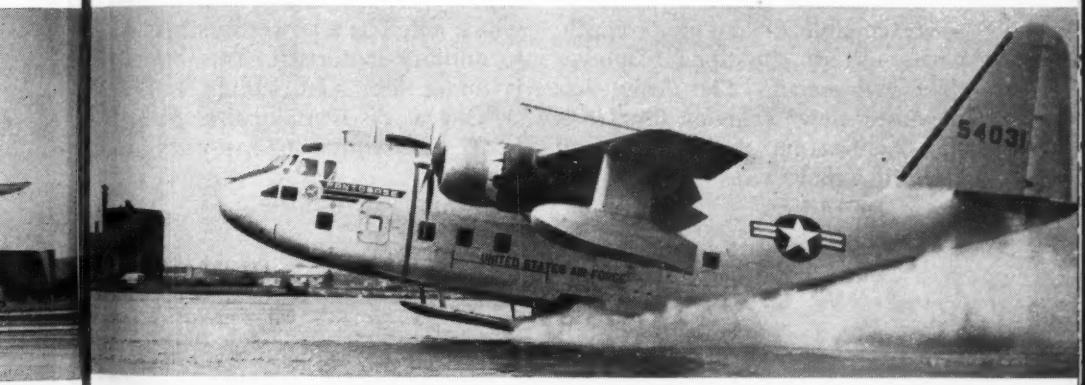


The C-130, with roughly twice the capacity, is scheduled to replace the older C-119 shortly.

It is already apparent that air transportation is often the cheapest and best means of supplying a theater of operations with expensive, scarce, or little-used items when the need arises. Much time and effort can be saved by sending replacements and reinforcements

by air. The need for aerial evacuation of casualties, too, is well established. For all these missions, the civil aviation industry forms an essential and valuable addition to military air transportation.

Development of the Civil Reserve Air Fleet must be continued. In addition to designating more civil aircraft for military use in an emergency, aircraft must be modified and fitted with special equipment for military purposes, and civil air crews must be trained for their military tasks. Thus the transition from peacetime transport to military auxiliary can be made quickly and efficiently.



This Pantobase experimental aircraft is specially designed to land and take off from land, water, ice or snow.

THE ARMY'S need for strategic mobility is well summarized in remarks of the Chief of Staff, General Maxwell D. Taylor, speaking at the tenth annual convention of the National Defense Transportation Association. General Taylor put it this way:

"This requirement for strategic mobility will face the Army as a phase of general or local war. The means of transportation used will depend on the situation. If conditions in the United States are similar to World War I, II, and the Korean War, our overseas deployments may follow the conventional pattern, depending largely on ocean shipping. If the time factor is urgent, if enemy bombing damages our ports, or if enemy submarines obstruct our sea lanes, the Army must look to the air for its strategic mobility. We have a long way to go to reach a state of readiness in airborne strategic mobility consonant with the needs of the Army. There is much to be done by the Air Force, by civil aviation, and by the Army itself in order to produce the cooperative results required.

"Apart from the responsibilities of other agencies in this important field, the Army has its own work cut out in improving the air transportability of its equipment. Weight and complexity are the enemies of this objective, a fact which must be written large at the head of every study of Army supplies and

equipment.

"The means to improve our strategic intercontinental mobility are not entirely within the control of the Army. To a large degree we are hitch-hikers and straphangers, dependent on the other services and civil aviation for the indispensable ride, which may mean victory or defeat on the ground in some distant area. We need a sympathetic understanding of our transportation needs if we are to be able to get some important place 'fustest with the mostest men,' to quote a famous exponent of mobility, Nathan Bedford Forrest.

"The Nation needs a powerful Army capable of coping promptly with military situations wherever they may occur. The Army has powerful new weapons, but it is the combination of firepower and mobility that wins wars. The Army's firepower is growing steadily, but the development of adequate mobility is lagging behind. The Army does not yet have the degree of mobility on the sea or in the air which it considers essential to enable it to bring its firepower to possible areas of decision in sufficient quantities at the rate required.

"In war, victory is to the strong and to the swift. During the Army's airborne invasion of Holland in September-October 1944, there was a critical bridge at Nijmegen over the Waal River in full view of the Germans at Arnheim. Over the bridge was a sign which acted as a powerful stimulus to military motorists: 'This bridge is under fire. Get mobile.'

"Our world is under fire. It behooves the Army—our Army—to get mobile."

New Official Army Song

OPPOSITE are the words of the new official Army song, "The Army Goes Rolling Along," which was dedicated at Army installations throughout the world on Veterans Day, 11 November.

Adoption of an official Army song climaxes eight years of search. After conducting a nationwide contest in 1948 and enlisting the aid of leading music composers, publishers and recording studios in 1952, the Army finally found its song in words and music composed almost fifty years apart.

Basic melody of the new song is that of the rousing, familiar "Caisson Song" which was composed in 1908 by Lieutenant (later Brigadier General) E. L. Gruber, assisted by several of his fellow lieutenants of the 5th Field Artillery, then stationed in the Philippines.

Lyrics for "The Army Goes Rolling Along" were selected from some 140 contributions submitted by major Army commands. The new lyrics, based on the old "Caisson Song," were revised and adapted by Dr. Harold W. Arberg, Soldier Music Advisor, Special Services Division, the Adjutant General's Office.

The newly adopted song will be performed on all appropriate occasions throughout the Army Establishment.

"The Army Goes Rolling Along"

Verse:

March along, sing our song
With the Army of the free.
Count the brave, count the true
Who have fought to victory.
We're the Army and proud of our name!
We're the Army and proudly proclaim:

First Chorus:

First to fight for the right
And to build the nation's might,
And THE ARMY GOES ROLLING ALONG.
Proud of all we have done,
Fighting till the battle's won,
And THE ARMY GOES ROLLING ALONG.

Refrain:

Then it's hi! hi! hey!
The Army's on its way.
Count off the cadence loud and strong:
For where'er we go, you will always know
That THE ARMY GOES ROLLING ALONG.

Second Chorus:

Valley Forge, Custer's ranks,
San Juan hill and Patton's tanks,
And the Army went rolling along.
Minute men from the start,
Always fighting from the heart,
And the Army keeps rolling along.

Refrain:

(Same as above.)

Third Chorus:

(slower, more freely)
Men in rags, men who froze,
Still that Army met its foes,
And the Army went rolling along.
Faith in God, then we're right
And we'll fight with all our might,
As the Army keeps rolling along.

Refrain:
(In tempo)

Then it's hi! hi! hey!
The Army's on its way.
Count off the cadence loud and strong; (two! three!)
For where'er we go, you will always know
That THE ARMY GOES ROLLING ALONG! (Keep it rolling!)
And THE ARMY GOES ROLLING ALONG!

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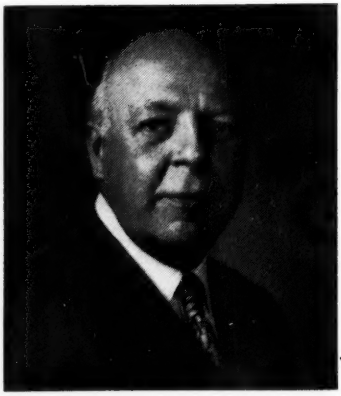
Top-level analyses of the Army's present capabilities and future

of the United States Army, where attention was focused on a



THE ARMY OF

The Honorable Wilber M. Brucker
Secretary of the Army

The fundamental aim of American military policy is to support our foreign policy, of which it is an inseparable part. America's major goal is the prevention of war and the establishment of enduring peace in which will be enthroned the principles and human values which are the foundations of our enlightened civilization. Our Armed Forces are not only the reliable guardians of our freedom and national integrity—they are also the most dependable pillars of our diplomacy for peace.

> **Our military policy is not shackled to a single concept of war, nor is it based upon any one weapon or family of weapons. A resourceful enemy could be expected to strike by one means or another at our weakest point. Hence we are not allowing ourselves to be weak or vulnerable in any particular.**

In support of our mutual defense alliances and other arrangements, nearly half the strength of our Army is stationed overseas in 73 countries. . . . Army missions in 44 countries of Europe, Asia, and South America are busy with the continued strengthening of our allies. Over 6,000 highly qualified Army troops are directly engaged in helping to train more than 200 allied divisions—a sizable part of the Free World's military strength.

> **Our streamlined Army has impressive mobility, both strategic and tactical, which would be a prime factor of success in any war we might be called upon to fight.**

Although we are stressing the development of atomic weapons, missiles, and rockets, we are not overlooking the importance of continued improvement of conventional weapons. . . . In any situation that might develop, you can be sure the Army will have the means at hand to apply the exact amount of force required—from the silent thrust of a bayonet to the blast of a powerful guided missile.

> **The existence of large organized Army Reserve forces which can be called into active service on very short notice is fundamental to our defense policy. It is an indispensable part of our insurance against defeat if we should become involved in war. It is an equally essential element of our ability to prevent war. It serves to make crystal clear to any potential aggressor that we are not only ready to fight if we are attacked, but, of even greater consequence, that we have the "defense in depth" with which to win.**

In the final analysis every American bears a share of the responsibility for the Army's success in carrying out its mission, for it draws its vitality from the imperishable strength and solid support of the American people.

trends highlighted the Second Annual Meeting of the Association

all-important subject—

THE FUTURE

General Maxwell D. Taylor
Chief of Staff, United States Army

Perhaps the most pressing problem which the Army faces today is to assess the impact of atomic-bearing missiles and projectiles on the nature of the land battle and, then, to effect a proper adjustment of organization, techniques, equipment, and weapons.

> There is a simultaneous need to evaluate the continuing requirement for so-called conventional weapons. . . . Capability to use nuclear and non-nuclear weapons in any combination is not a straddling of the issue but, rather, a basic necessity for Army forces.

There will never again be a war involving the major powers without the use or the threat of use of nuclear weapons. Until they are used, the threat will hang over every engagement, and will impose a requirement for constant readiness for a nuclear surprise. A sure way to encourage an enemy to use nuclear weapons would be to confront him with a force unprepared for nuclear action.

> The nuclear weapon, coupled with the modern missile, permits the massing of proportionate forces to deliver that massed fire. This is a new aspect of ground warfare. The Army which adapts itself first to it and develops some relative advantages from it will prevail in modern battle.

On the other hand, Army forces must not be completely dependent on nuclear weapons. There are many conceivable situations when it may be to our own interest to avoid the use of these destructive weapons. Our policy is to use them when it is militarily to our advantage.

> In developing future Army forces adaptable to the atomic battlefield, we are impressed with the need to accomplish four things: First, we must increase our ability to locate atomic targets on the battlefield. Second, we must increase our ability to deliver nuclear fires. Third, we must reduce our susceptibility to detection by the enemy. Fourth, we must increase our ability to exploit our own firepower.

The purpose of land maneuver tends to become that of finding or forming suitable enemy nuclear targets, then of exploiting the effect of nuclear fire. Thus it is that the nuclear weapons and the forces which they support are completely interdependent. Nuclear weapons in themselves are inconclusive. In the final

analysis, sizable ground forces must be used if the enemy, his people, and his land are to be brought under control.

> Nuclear weapons to be effective must be used in conjunction with land operations. This fact is basic to the organization of modern armies and is in direct contradiction to the mistaken concept that nuclear weapons can somehow replace ground forces, whereas in actuality they only support them.

The Army possesses the land transport, the mobility, the supplies, the ordnance, the engineer skills, and the ground protection to make possible mobile, concealed missile sites which, by nature of the terrain in which located, can possess a low degree of susceptibility to enemy detection and conversely a high degree of reliance for striking back at the enemy.

> The improvement of cross-country mobility holds forth the best prospects of reducing the susceptibility to enemy detection of Army combat forces. This mobility may eventually be attained largely by low-flying air vehicles.

The ability to disperse and hide, coupled with the ability to converge and fight, requires mobility of a kind we have only begun to appreciate. Too often in the past the mobility we sought as protection against atomic fires simply increased the number of vehicles and amount of equipment in the battle zone and, by so doing, created for the enemy the potential targets we seek to avoid.

> Rapidity of offensive reaction must stem not only from an increased mobility and streamlined command echelon, but also from the ability of small battle groups to operate independently for long periods over great distances, coupled with an ability to live dispersed and to concentrate rapidly to fight.

Nothing we have discovered or nothing that we expect to discover will reduce the need for brave men to fight our battles under conditions of hazard and hardship. New weapons and machines will serve our soldiers without replacing them.

New Developments In Prospect

Lieutenant General James M. Gavin
Chief of Research and Development,
Department of the Army

The land is man's natural environment and therefore domination of land areas must inevitably remain the ultimate goal of nations at war. . . . The Army's ability to achieve and maintain such domination has been tremendously increased over the past decade. New aircraft, rockets, missiles, atomic munitions and other materiel have been added to the Army arsenal to give it the power and posture demanded by this modern era.

> The improvement of inanimate objects of war has never been, nor ever will be, a panacea for a secure military posture. In the final analysis, these are but "tools of the trade" and their real value can only be defined in terms of the skill with which they are employed. It is the innovation of employment of new weapons and not the innovation of their possession that is the gauge of victory or defeat in war.

Welfare [of the combat soldier] on and off the battlefield must be our paramount concern. The Army has accelerated its program for sterilizing and preserving foods by heatless exposure to ionizing radiation in order to assure him a thorough and balanced food supply at all times. . . . Vigorous research is underway and results thus far most promising to protect him against the thermal effects of atomic weapons. . . . Exhaustive investigations continue with regard to blood plasma and whole blood, to save a life that might be lost otherwise. . . . And finally, another startling innovation—the Human Parts Bank! Human blood vessels, maintained in the living state by the freeze-dry process, are now widely used for repairing damaged blood vessels. . . . Human corneas can now be preserved. . . . Skin, bone and tendon can be held at temperatures just above freezing. . . . New realms to be explored in this exciting era are so many and their guide posts so unique, that often the imagination is staggered.

The day will come when the missile form itself can serve men as a means of transport. We must be prepared to provide the high energy fuels required for its propulsion; this will be a key requirement for that new mode of travel.

Tradition—A Guide For the Future

General Willard G. Wyman
Commanding General,
Continental Army Command

One of the most disturbing symptoms of our times is the tendency to forget that the debt to tradition must be paid with interest by every generation. . . . In our haste to keep pace with the sweeping advance of our 20th Century science and technology, we are in danger of forgetting man's future need for the guidance of tradition.

Too often we are exhorted in the name of progress to "break with tradition!" What I hope the exhorters mean is that we must break the stale crust of custom.

Without tradition our great battle-teams would be merely expensive collections of weapons and men—merely that and nothing more. Our most powerful weapons would be impotent to defend us without men to use them who are motivated by tradition to preserve the Nation regardless of cost to themselves.

We will never find in a cyclotron or test-tube the esprit de corps that tradition can evoke from the human heart!

The accelerated evolution in firepower that has already occurred in warfare demands many new tools, tactics and techniques. . . . But before men can act in new patterns, they must think in new patterns.

Where national defense is concerned, there is no distinction whatsoever between the best interests of the professional soldier, the ex-soldier, the part-time soldier, or the patriotic civilian! Where national defense is concerned, we are all full-time Americans. National defense knows no profession!

The Impact of Nuclear Weapons on Future Organization

Dr. Edward Teller

Associate Director, University of California Radiation Laboratory, and Member, General Advisory Committee, Atomic Energy Commission.

We have entered the age of atomic plenty. . . . Actually a given explosive power obtained from nuclear sources is incomparably cheaper than the same power derived from TNT. . . . Fissionable material has become our cheapest effective weapon. . . .

> I am convinced that nuclear bombs can be used for defense in the strictest sense of the word. They can be used in a way which will do minimal damage to the civilian population, and which will be concentrated on the armed forces of an opponent.

The existence of nuclear bombs, and in particular the hydrogen bomb, will make the concentration of hundreds of thousands of people into a single attack a futile and obsolete procedure.

> The existence of powerful and easily transported weapons makes the use of massed materiel and manpower impractical. At the same time it provides the means for a warfare of extreme mobility.

Such warfare would involve small, self-sufficient fighting units capable of rapid independent or collective action over large areas and would be a far cry from the regular front-line operations of past wars. I believe that this warfare of extreme mobility and dispersion will turn out to be the key to real military power.

> I have in mind an Army in which the basic fighting units will be battle groups of a few hundred men each. Each battle group would be completely self-contained. No effort shall be spared to equip it plentifully with the best we have in rapid transportation, in media on the ground, over water, and in the air. No effort shall be spared to provide it with the best means of communication. Finally, each battle group would be equipped with the most powerful and easily transported weapons. It should have perhaps a few dozen nuclear weapons with assorted delivery systems and arrangements made to provide additional munitions as required.

The battle groups of such an Army could be made to appear at almost any place in the world within a time not exceeding two days. They could fight for the control of vital positions wherever necessary. They could be at the service of our allies in the time of need without being quartered on their territory in time of peace. They could powerfully help to liberate oppressed people without bombing them to bits. They could draw on supplies from the country which they help, and organize and lead fighting groups to maintain their own freedom and independence. In sum, an Army composed of such units would be more like the knife of a surgeon and less like the axe of an executioner.

> The outstanding characteristic of such an Army would be the extreme independence and self-reliance that would be required of each of its members.

Arctic Test Branch gets the

COLD FACTS ON ARMY EQUIPMENT

Colonel Phillip F. Hoover

INDUSTRY has its quality control and testing laboratories. In the Army, too, every item of equipment must undergo rigid tests before it can be accepted for use. Such tests include not only engineering examinations but field tests under varying conditions. The Army's agency for performing cold weather tests over Far North terrain is the Continental Army Command Arctic Test Branch (ATB) at Fort Greely, Alaska.

The Branch, located 105 miles southeast of Fairbanks, Alaska, was established in 1949 as a permanent test agency for Army Field Forces (now CONARC); its activation was an outgrowth of cold weather tests conducted several years earlier by Task Force Frigid.

Today, as the cold weather test agency for CONARC, ATB conducts "user" tests on all types of Army equipment under arctic and sub-arctic conditions. Everything from mittens to aircraft, rifles to howitzers, jeeps to tanks, is subjected to tests designed to improve the Army's capability to live, move and fight in adverse climates.

Some 565,000 acres are available for tests and maneuvers at ATB. Included are firing ranges for weapons, vehicular test courses and airborne test drop zones, as well as the Fort Greely reservation and the Big Delta Air Force Base facilities now transferred to Army.

By virtue of its location 175 miles south of the Arctic Circle, the Branch is a great outdoor laboratory providing almost every conceivable type of weather and terrain. Forty below zero temperature is commonplace, with lows of –50°F. or lower occurring every winter. Summer temperature ranges as high as 80° to 90°F. for brief periods.

Unfortunately during January and February, coldest part of the test season, daylight is at a premium. But by the 21st of March, the sun is above the horizon 12 hours a day.

Cold spells, which usually last from 36 to 48 hours, are normally brought to an end by wind. Fort Greely itself has the windiest climate in the interior of Alaska. Winds of over 40 miles per hour

COLONEL PHILLIP F. HOOVER, Artillery, is Commanding Officer, Arctic Test Branch, Continental Army Command, Fort Greely, Alaska.

Shortest day of the year is Christmas Eve. Here the stop camera records the sun peeping over the horizon from 1040 to 1240 hours.

can be expected once per week the year around. Of importance to the test program is the fact that the wind brings a temperature rise of 20 to 40 degrees.

An interesting but aggravating weather phenomenon is ice fog which generally occurs when temperatures reach –30°F. in inhabited areas. This fog consists of microscopic ice crystals which form on smoke particles given off during combustion of gasoline and oil. Although apparent only about five per cent of the time, it poses a serious problem since it occurs during the best testing weather and often restricts visibility to less than one-sixteenth of a mile.

WITHIN this cold, frozen northland area ATB personnel live and work, sometimes spending days and weeks in the field. Thorough indoctrination in survival techniques is a "must." Armed with the knowledge of arctic ways, men learn to respect but not to fear the effects of deep cold and wind chills.

The Commanding Officer, ATB, is directly responsible to CONARC for cold weather tests of equipment which undergoes normal testing at the six CONARC Boards. Technical matters are handled directly with the Board having primary interest in the item. Logistical support is provided by the Commanding General, U. S. Army, Alaska.

Like the other six CONARC Boards, ATB also provides guidance to developing agencies, participates in troop tests, improves existing equipment, recommends maintenance procedures and assists schools in preparation of training literature. Membership is also maintained in the Arctic Guidance Board of Headquarters, United States Army, Alaska.

ATB stresses the concept of testing under severe climatic conditions found in all north temperate regions (including the northern part of the United States) rather than concentrating exclusively in polar extremes. Cold weather tests start at freeze-up (September) and continue throughout the winter and into break-up (April). While climatic extremes of –50°F to –60°F. are useful in gathering test data, the compiling of durability and reliability data in daily testing over winter months is equally important. About one-fifth of all projects require tests during all four arctic seasons—summer, freeze-up, winter and break-up.

Although temperatures as high as 90°F are encountered during sum-

mer tests, these do not necessarily repeat conditions encountered in the temperate zone. Two highly important differences exist.

First, arctic terrain imposes mobility problems not experienced elsewhere. Vast areas of soft marshy tundra, sticky muskeg bogs, dense sub-arctic forests and permafrost impose strains on vehicle suspension systems and power trains that cannot be duplicated in temperate areas. Second, glacial dust consisting of highly abrasive quartz-like particles, introduces extreme wear on all moving parts. Wind-blown, glacial dust clogs the air filters and infiltrates the engine, producing accelerated wear, greater part mortality and increased maintenance. Equipment rugged enough to perform satisfactorily under such conditions can operate in temperate climate without difficulty.

THE ATB test program is established each year at an Arctic Planning Conference usually held in April at Headquarters, CONARC, Fort Monroe, Va. The appropriate Boards then develop tentative plans of test for each item of equipment. Each program averages approximately 100 test projects covering all types of Army equipment.

Most items have previously undergone temperate zone user tests at one of the Boards in the States. Depending on the nature of the item, tests may include all four seasons, or be limited to the effects of arctic winter conditions only.

Tests on vehicles, for example, usually include at least 2000 to 4000 miles of highway, secondary road, and cross-country operation over frozen and unfrozen terrain, with and without snow cover. Included in this mileage when appropriate are trail-breaking operations and river and stream crossings.

WHILE mobility of vehicles over snow-covered terrain is of great importance, the effects of extreme cold are of equal interest. This condition affects the tolerances of moving parts, the molecular structure of metals (resulting in decreasing resistance to shock), the hardening and ultimate fragmentation of rubber compounds. It requires the use of special oils for lubrication, special aids for cold starting of engines, winterization kits and special provisions for warming shelters.

Behavior of equipment is carefully recorded in reports. The results, however, are influenced and in some cases governed by the physiological and psychological reactions of the personnel exposed to the same climatic environment as the equipment. A soldier continuously exposed to dangerous wind chills or extremely low temperatures may take twice as long to do half as much.

Analysis of the interrelationship of the soldier and his equipment was an important element in the development and test of the arctic uniform. ATB was instrumental in recommending a number of changes to make the uniform more suitable for using troops. The outer layer of the uniform, for example, was not sufficiently resistant to heat. When the soldier stood too near a stove or fire, the fabric melted. Numerous changes were recommended in pockets, sleeve and leg closures, and other parts of the uniform. Zippers and seams were strengthened. After several

Materiel like this 81-mm. mortar is thoroughly tested under winter conditions by members of Arctic Test Branch.

years of tests, the modified uniform was subsequently adopted as standard type and today is issued to all military personnel assigned to arctic and sub-arctic regions.

PROTECTION for the soldier's hands and feet has presented a much more difficult problem. The greatest difficulty with arctic handwear, and one not yet completely solved, is how to provide warmth to the hands and yet not interfere with the soldier's manual dexterity.

The rubber thermal boot developed by the Quartermaster Corps to overcome frostbite in cold wet climates was successfully used by troops in Korea. Tests of a thermal, or vapor barrier, boot were initiated at ATB in 1952 to determine the suitability of the boot for cold dry use in arctic regions. Compared with the conventional arctic felt boot and mukluk, the use of vapor barrier boot offers certain advantages—only one pair of socks is required, insoles are eliminated, durability is improved and the boot can be worn the year around. However, the vapor barrier boot cannot be safely worn at temperatures below −20°F for extended periods.

Currently ATB is testing new versions to obtain a boot suitable for year around wear.

WHENEVER the subject of mobility in Northland regions is raised, most people think first of oversnow movement under conditions of extreme cold. Of equal importance—and in many ways a much more difficult problem—are the difficulties faced during the summer season, including break-up and part of freeze-up.

Summer brings vast areas of marshy muskeg, swollen streams, lakes, swamps, mud and mosquitoes. General use of wheeled vehicles is restricted to a few roads. Cross-country movement is, at best, slow and tedious requiring extensive route reconnaissance and trail preparation. Supply logistics is a pressing problem which must be squarely faced and solved either by development of a more economical power package or by use of more efficient fuels.

Durability tests of track laying vehicles at ATB have disclosed many deficiencies in the track suspension systems. On a four-season arctic test, tracks, road wheels, hydraulic shock absorbers and sprockets are subjected to tremendous physical and thermal strains. Great difficulty has been encountered with broken end-con-

Summer mud and muskeg present as difficult mobility problems as do deep winter snows for this M-48 tank.

nectors in track sections, rubber chunking off the road wheels, dead shock absorbers, and broken tracks caused by snow in the sprocket.

The majority of failures occur during break-up and freeze-up when the ground is partly frozen and there is insufficient snow cover to give a cushioning effect. Maintenance time has run up to one man-hour for two miles of operation.

Arctic Test Branch has studied this problem extensively during the past six years and numerous recommendations for corrective action have been made. Improved suspension systems now include new type end-connectors, friction snubbers instead of hydraulic shock absorbers, compensating idler wheels to clear tracks, and self-cleaning sprockets. Maintenance time has been reduced to one man-hour for approximately 10 miles of operation. Further reduction is essential.

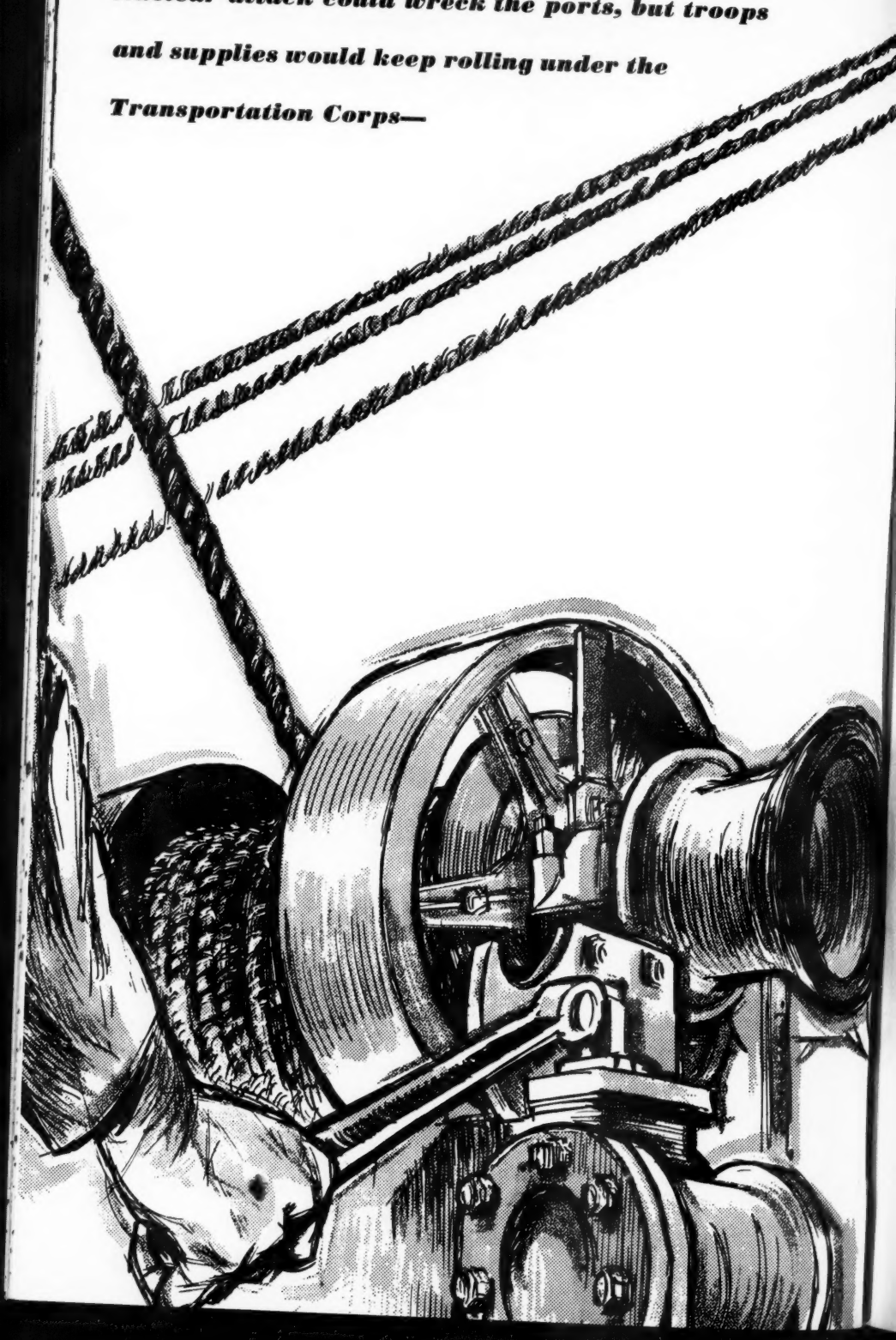
GENERALLY speaking, electronic equipment has worked surprisingly well under arctic winter conditions. Currently, the major problem involves battery power.

Wet batteries cold soaked at sub-zero temperatures, it has been found, lose 90 per cent or more of their effectiveness; and dry batteries fail in a matter of minutes. Since battery action depends upon chemical reaction, the application of external heat is the most obvious approach. Acceptable performance of wet batteries is obtained by directing heat around the battery compartment—a procedure followed in standard vehicular winterization kits. Applying external heat to dry batteries, however, has not proved too successful.

In 1953, ATB tested a vest battery pack for a man-portable radio set. The vest was worn under the parka and utilized body heat. While some improvement was noted, it was not considered entirely satisfactory. A new type cold weather dry battery furnished for test last year shows promise of much better performance at sub-zero temperatures, but the battery has certain storage limitations and a short shelf life.

TECHNIQUES of living, moving and fighting in arctic areas, it is evident, produce problems of fantastic complexity. As the only cold weather user test agency for the Army, ATB operations emphasize the problems encountered by men and machines, suggest ways for their solution, and confirm development work for their correction—all designed to increase the Army's capability to live and fight in Northland regions.

Nuclear attack could wreck the ports, but troops and supplies would keep rolling under the Transportation Corps—



Major General Evan M. Houseman

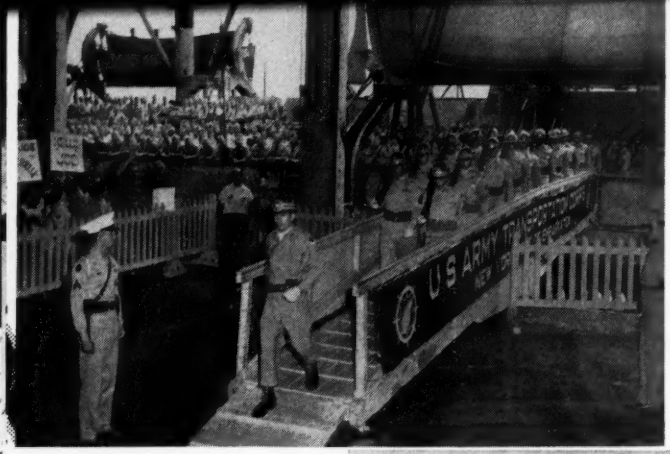
PHYSICALLY the piers, docks, rail facilities and buildings remain unchanged at New York, Hampton Roads, Sunny Point, New Orleans, San Francisco and Seattle. They continue to be used for the same purposes—moving troops and military families in and out. The flow of materiel, too, continues as before.

But today these facilities no longer exist as "Ports of Embarkation." Now they are integral units of the new Transportation Terminal Commands, which themselves are the end results of a new logistical development—the Terminal Command concept.

MAJOR GENERAL EVAN M. HOUSEMAN is Commanding General, Atlantic Transportation Terminal Command.

THE Terminal Command concept is simple to state and easy to understand. But as with many other concepts, implementing it has proved more difficult, and it should be emphasized that this phase still is being worked out.

Briefly, the concept provides for establishment of a terminal command headquarters for each principal coastline; realignment of functions of existing POE's to produce two separate organizational entities—a terminal command head-



Troops . . .

Their Families . . .

quarters and a subordinate terminal organization to operate the immediate Army terminal; identical organization of all headquarters along standard military lines but with directorates rather than general staffs; and decentralization of operations to subordinate terminals organized along industrial directorship lines.

While terminal command headquarters are designed to remain at the existing port installations, the concept provides for their rapid removal from the principal port cities in event of an all-out emergency. They could then be relocated inland in less vulnerable target areas. Thus mass destruction of a terminal would not automatically entail loss of the organization responsible for control of terminal operations along an entire coast.

In event of mobilization, establishment of such terminal command headquarters will provide much greater flexibility in rapid expansion and dispersal of Army terminal facilities.

Thus, instead of establishing subports, slowly building them up until final conversion as full Ports of Embarkation and then reversing the process following hostilities, it will be possible to utilize as many commercial terminals as required. Further, it will be possible to activate as many military terminals as desired with maximum speed, efficiency and economy. The terminal command headquarters also can assume control of necessary staging

areas, holding and reconsignment points and the like, without disrupting the existing organization of operating terminals.

This basic concept was evolved and then implemented by the Transportation Corps to meet changes in strategy and tactics imposed by the advent of nuclear weapons—weapons which have their impact not only on the combat arms but on the technical services as well. The concept was worked out when it became apparent that our major domestic and foreign ports could be rendered untenable and inoperable through nuclear attack and resulting radiation. Planning and organization were imperative to insure that in such case—or even in case of a peacetime catastrophe such as fire, explosion or flood—the flow of troops and supplies would continue uninterrupted in a global over-the-beach operation.

TO BEGIN implementation of the new concept, the former New York Port of Embarkation was chosen as a pilot. Indicative of its new role, NYPE was redesignated Atlantic Transportation Terminal Command; and the old Brooklyn Army Base became the Brooklyn Army Terminal. Similar reorganizations were effected utilizing Gulf and Pacific Coast Ports of

Essential Supplies . . .

. . . will still keep flowing even if nuclear attack should wreck existing installations like Brooklyn Army Terminal.

Embarkation and Army Bases.

Although operative only since April 1955, dramatic results already are apparent.

First and most obvious is more efficient operation. Separation of the command staff from operations has permitted a realignment of functions with missions at the terminal level. This has resulted in lopping off an even dozen administrative branches, which in turn eliminated duplication of effort.

Second, large sums of money were saved to the taxpayer through the reorganization at the New York installations alone. As procedures developed there are disseminated to the other Commands, even more savings will be effected. At New York alone, about 750 civilian jobs could be immediately eliminated.

Parenthetically, it might be pointed out that 250 of these were vacant spaces saved for the occasion so that 500 persons were actually displaced. A carefully planned public relations program was put into successful operation to place these employees in other Government agencies or private industry. Later, 350 added reductions were absorbed by attrition.

Third, in terms of cargo load, better proportionment among the terminals is becoming apparent. The Director of Operations now is in a position to monitor the workload, whereas the former Operations Division at NYPE did not have as comprehensive a control system.

Fourth, staff work is reflected in greater efficiency in planning, training and organizing operations at the Terminals. Each Terminal now feels that it has its own headquarters to approach with its particular problems. Effects can already be noticed in the new feeling of responsibility evinced by foremen and supervisors.

Added to these results, a larger and more encompassing innovation has been the installation of the Army Industrial Fund (AIF). Success of this program at the Atlantic Transportation Terminal Command will insure its spread to other Army agencies with similar industrial type operations.

Briefly the Army Industrial Fund substitutes one budget for a multiplicity of appropriations and separate accounts. Cost accounting, by providing a firm end-service figure for the cost of one passenger and one ton of cargo, has induced much more careful use of time and money. It also is inculcating foremen and supervisors with a true cost-consciousness that is resulting in greater operational efficiency.

AS a further projection of the Terminal Command Concept, the four existing POEs—New York, New Orleans, San Francisco, Seattle and the subport at Hampton Roads—have been replaced with three terminal command headquarters. These now are known as Atlantic, Gulf and Pacific Terminal Commands, located respectively at New York, New Orleans and San Francisco.

Under their collective jurisdictions now come the five principal Army terminals—Brooklyn, Hampton Roads, New Orleans, Bay Area, and Seattle Army Terminals. Each consists only of essential operating elements.

In addition, the command headquarters have jurisdiction over the various Army ammunition termi-

nals and other Class II activities formerly assigned to four POEs.

OPERATING a whole coastline of terminals is a vibrant, dynamic business. Little ever remains stagnant or static. Always the emphasis is on new ways of doing things that will increase efficiency.

These may range from comparatively simple procedural changes, such as the new self-service supermarket method of issuing supplies recently installed at Brooklyn Army Terminal, to larger and more encompassing innovations such as installation of the Army Industrial Fund.

Impact of the Industrial Fund is making itself felt in many ways. As an illustration, when a crane is assigned by the Equipment Division upon request, the foreman's particular operation is charged with it on an hourly basis until it is returned. Now foremen find they need the crane for a few hours only, whereas previously it was usually kept out for a full day.

Cost-conscious supervisors also have obtained some startling results in reducing expenses. As an example here, fork lift trucks in use are of two types, gas and electric. The gas truck costs 40 cents an hour more to operate than the electric—but they had been more popular with workers because the operator can sit in the gas lift truck. But today, because sitting down is more expensive, the electric trucks are in greater use. The supervisors see to that.

TODAY the Terminal Command Concept is more than a theory. In the Atlantic Transportation Terminal Command it is already a practical, working reality, which has effected considerable savings through greater efficiency and smoothness of operations. More will obviously follow as experience is gained. And most important, in case of war an atomic attack on existing port facilities would not result in costly—perhaps fatal—stoppages. Because of the experience already gained, entire coastlines now are capable of being utilized for over-the-beach movements of men and supplies geared into similar operations overseas. The new Transportation Terminal Commands will keep the necessary materials moving.

Travel Literature

Helpful Hints for Personnel Ordered to Germany (Department of the Army Pamphlet 21–67) is being issued to officers, enlisted personnel and dependents to provide information on travel requirements and living conditions that will enable the serviceman and his family to prepare for a tour of duty in Germany.

Second of three volumes in a series on the role of the Transportation Corps in World War II has been issued by the Office of the Army Chief of Military History. Entitled "The Transportation Corps: Movements, Training and Supply," *the book deals with procedures used in the movement of troops and materiel within this country, the methods and problems encountered in training troops, and with providing equipment and supplies necessary to maintain an effective transportation service overseas. The book is available from the Superintendent of Documents, Government Printing Office, Washington 25, D.C., at $4.25 a copy.*

Pioneering advances in military medicine—

Army Research Aids Mental Health

Colonel Albert J. Glass

WHILE the complex and highly destructive weapons of modern warfare occupy the forefront of popular attention, their effective utilization is still dependent upon the physical and mental well-being of the individual soldier.

During the past 75 years, military medicine has made remarkable progress in maintaining the physical health of troops despite adversities of climate, jungle, desert, and other unfavorable environment, and amid exposure to various infectious diseases. However, interest in preserving the mental health of military manpower is only of relatively recent origin.

Major effort in this direction began in World War II. Early in that conflict it became apparent that emotional difficulties could significantly reduce a man's military effectiveness. Moreover, continuing maladjustment frequently resulted in hospitalization for mental illness or confinement for disciplinary infractions.

In World War II there were about 1,000,000 admissions to military hospitals for neuropsychiatric disorders. Of these, approximately 545,000 were discharged from the service. These experiences sharply emphasized the need for better understanding of the causes of mental disorder so that adequate preventive measures could be instituted.

Military environment, it should be noted, differs from civilian existence chiefly in its unique external stress, which may vary from lack of privacy to the hazards of combat. Adjustment to military life involves mainly the ability to withstand and absorb changes that may be unusual, abrupt, or dangerous. Failure to cope with environmental changes and problems, then, is the basic problem of military mental health. In other words emotional difficulties in the Army are due primarily to outside or external causes as contrasted with civilian psychological disorders where the environment is relatively stable and the major defect seems to lie within the individual himself.

For these reasons initial research in Army mental health was mainly concerned with developing methods of selecting military personnel who would be capable of with-

COLONEL ALBERT J. GLASS, Medical Corps, is Deputy Director, Neuropsychiatry Division, Walter Reed Army Institute of Research, Walter Reed Army Medical Center, Washington, D. C.

standing the rigors of Army life. It seemed logical to solve the problem by eliminating all unstable and neurotic persons at the induction point, accepting only those individuals with superior mental stamina. However, events of World War II conclusively demonstrated the impracticability of this solution, for despite the rejection for neuropsychiatric disorders, and mental and educational deficiency, of approximately one out of every eight inductees, behavioral abnormalities and psychiatric casualties occurred in large numbers.

EVEN during the early stages of World War II it was apparent that the initial psychiatric examination could not accurately predict later military performance, since it was impossible to foresee the particular circumstances that would confront each individual during his Army career. Moreover, as the war went on, there came the realization that the military environment contained powerful reinforcing influences such as "buddies," group spirit and leaders—all of which helped to sustain emotional balance. The military setting demonstrated the extraordinary capacity of men to adjust and remain effective even under conditions of severe want and danger. One could not view mental breakdown as a simple result of external stress operating upon a vulnerable individual.

With recognition of the many aspects involved in maintaining mental health, research in this sphere turned toward understanding the interaction of man with his environment, rather than concentrating upon identification of his defects. From a practical standpoint, this approach led to efforts to help the soldier overcome his problems while he remained with his unit, instead of eliminating him as sick or unfit. Psychiatric facilities were therefore brought to the soldier. He was aided in solving his difficulties in the field, rather than being removed to a hospital. Such removal only emphasized his failure to adjust, and produced an inevitable loss of self-esteem.

THIS new concept of improving mental health stimulated the creation of two types of psychiatric facilities. The first, a mental hygiene consultation service, operated at posts and stations in the United States. The second, intradivisional psychiatric service, functioned in a similar manner for units in combat.

Mental hygiene consultation services were initiated in 1942 to aid new trainees in their transfer from civil to military life. Newly inducted soldiers are faced with multiple changes and frustrations that include regimentation, strenuous physical exertion, competition, lack of privacy, and differences in food and hours of work. Moreover, they are separated from friends and family and must seek new sources of emotional gratification.

While most individuals are able to make the adjustments required during this basic training phase, the discomfort and tension commonly experienced can produce temporary maladjustment problems severe enough to require guidance and help. It is important that such young men are not permitted to be overcome by this new experience. Loss of self-esteem that follows failure in training produces feelings of guilt and inferiority, making it

difficult to explain adequately to one's family and friends the reasons for such failure.

The mental hygiene unit, headed by a psychiatrist, includes personnel trained in social work and psychology. They work closely with officers and personnel of the training cadre to aid trainees undergoing adjustment difficulties. Such cases are not considered or treated as helpless patients but are kept on a duty status, while they receive expert counselling and guidance. Success of this program has increased the number and scope of mental hygiene consultation services. Today such units function in most Army posts in the United States and render service not only for trainees but also for assigned personnel. Similar psychiatric facilities have been established in oversea garrisons.

PERHAPS the most significant contribution in aiding the soldier to help himself in overcoming adjustment and environmental problems resulted from the trial-and-error research experiences of psychiatry in the combat zone during World War II. It was found that when men suffering from combat-induced fear and emotional turmoil were evacuated and hospitalized, they were rarely able to function again in battle. Such cases remained tense, uneasy and depressed even after weeks or months of treatment in rear hospitals. Often such symptoms became chronic and prevented assignment even to noncombat duties.

But when similar mental casualties were treated within the divisional area and as far forward as possible, recovery and return to combat duty was possible in the majority of such cases. It became apparent that removal from battle and hospitalization emphasized the man's failure to overcome an external threat. This, in turn, produced continuing fear and lasting apprehension.

On the other hand, a brief rest, hot food, and an opportunity to air one's feelings, if carried out in the forward area, provided the most favorable circumstances for a revival of sustaining forces within the individual. This revival helped to restore emotional control.

THIS approach to the psychiatric casualty sums up an important operating principle—namely, that almost anyone may be temporarily terrorized or overcome by external circumstances, as in combat, but most persons can rebound after a brief respite to master the situation. This is particularly true if the individual is returned to his original unit where he can receive support from buddies and other members of the group.

The same method of combat psychiatry was utilized with outstanding success during the Korean campaign. There, 70 to 90 percent of mental breakdowns due to battle were recovered for duty within the combat division.

In essence, the experiences of mental hygiene consultation service and combat psychiatry show that individuals are better able to cope with external frustration and danger than they themselves or others can predict. When an individual is helped to obtain mastery over the external situation, he is thereby strengthened for any later frustration or difficulty. On the

other hand, over-sympathetic acceptance of failure tends to foster helplessness and inhibition.

CURRENT research projects in Army mental health are concerned with a more detailed understanding of the basic mechanisms that underlie individual and group adaptation to stress. For example, considerable work is in progress involving psychological and chemical changes in individuals who are exposed to danger. Individuals facing major surgery are being studied in an attempt to uncover the psychological and physiological mechanisms that operate under the impact of such a threat. It is hoped that perhaps an insight may be gained regarding the events that occur in those persons who tolerate surgical procedures poorly.

Similar work will soon be under way on the effects of sleep and fatigue upon the human organism. It has been known for some time that loss of sleep and excessive fatigue produce a tendency toward combat fatigue and mental disorder in battle. This is important militarily, since troops often must fight under such circumstances. There is a real need to determine within limits the amount of sleep and rest necessary for adequate recovery.

The problems of high blood pressure and stomach ulcer is a subject of intensive research at the Walter Reed Army Institute of Research. These diseases have been commonly observed in military service, particularly during wartime conditions. Traditionally, such illnesses have been considered "psychosomatic" because they appear to be closely related to emotional conflict.

Research in the field of hypertension is conducted by use of sensitive, simultaneous recording devices that include the ballistrocardiograph, which measures the pulse and force exerted by the heartbeat, the respiratory rate, the degree of sweating, and the electrical activity of the heart.

Results indicate that individuals with high blood pressure maintain a rigid defense against emotional involvement. Their bodily mechanisms tend to be less responsive to emotional excitement than those of normal subjects. However, when this defense of withdrawal and noninvolvement fails, there are marked abnormal rises in blood pressure, particularly upon anger or frustration. It has become clear that the hypertensive person has learned to keep himself aloof in his relationship with others in order to prevent emotional turmoil and the subsequent over-reaction of his heart and blood vessels.

Another project at the Institute seeks to determine the characteristics of potential stomach ulcer victims. It is important to the military service that these individuals be identified prior to induction. Evidence has accumulated which permits a working theory to the effect that persons who develop stomach ulcer maintain a consistently high level of blood pepsinogen, an agent which controls gastric secretion.

Blood pepsinogen determinations have been made of a group of inductees, with individuals selected at random. Thus far, all individuals in this group who developed ulcer have had high blood levels of pepsinogen. Further work is in progress to refine this identification process by study of body build and personality.

SINCE man's relationship with his fellows has been demonstrated to be of paramount importance in maintaining mental health, studies of group interaction have been part of a continuing research effort. Research teams have investigated the behavior of combat groups during the Korean campaign. Their work has emphasized the vital role played by the means and methods of communication which serve to unite members of the group.

Other research teams from the Institute have investigated the adjustment problems of troops stationed in oversea garrisons. Such problems as venereal disease, disciplinary disorders, and the frequency of sick call, as well as the rate of mental disorders, have been found to correspond with the degree of group unity and the qualities of leadership.

Basic research is under way in various laboratories of this country, including those of the Walter Reed Army Institute of Research, as part of the constant endeavor to obtain information concerning behavior. This work involves investigation of the nervous system that runs the course from activity of the single nerve cell and its connections, to the function of so-called nuclei or masses of nerve cells in the organization of behavioral patterns.

Experiments are also conducted in the conditioning of animals and their response to stress. Methods of measuring the influence of drugs and brain lesions upon conditioned and unconditioned reactions have been developed. This data sheds new light upon the basic workings of behavior as well as changes and disturbances in adaptation that are produced by localized brain injury or stimulation of various areas in the brain.

Another group of investigators in the Institute have been studying the effects of severe head injury due to combat wounds or accidents. It has been found that the brain-damaged person reacts selectively to the disability produced by the trauma, based upon his personality characteristics. Thus, some persons deny any handicaps that may have resulted, and even chat about the circumstances that brought them to the hospital. Others insist that they are not in the hospital, or state that they are in a medical facility near or in their home town.

It has become apparent that with severe brain damage, an individual can employ the more simple type of adaptation, such as the wish-fulfilling thinking used by small children. This meaningful response to severe injury is not the direct result of the damage in the brain but, rather, reflects the efforts of the person to make a better and less painful adjustment.

In connection with studies of brain injury, there is a continuing research program to develop more sensitive psychological tests that will detect even minor degrees of brain damage. Individuals with minimal amounts of brain disease may appear on the surface to be quite normal, but they cannot function adequately under pressure. Their identification is important for military purposes, for such persons cannot be placed in assignments that require rapid and accurate decisions or the careful evaluation of a complex situation.

BECAUSE of the uncertain results obtained by psychiatric selec-

tion, a research group at the School is currently seeking to develop more reliable standards for acceptance or rejection from military service. Their results thus far indicate that the vast bulk of inductees gave average or better-than-average duty performance during the Korean campaign.

Individuals who came from so-called "broken homes" due to family disharmony or divorce, as well as those persons whose parents had a clear-cut mental illness, functioned almost as well as inductees who had no such difficulties during their early formative years. Nervousness in childhood or impaired school adjustment was not found to be particularly harmful insofar as later military performance was concerned. Persons of limited education, when sent to combat units in Korea, gave a creditable account of themselves.

All in all, these findings again point up the amazing capacity of human beings to make adequate adjustment even under trying circumstances, provided they are sufficiently motivated and receive the support of the group and its leaders. Past difficulties in the early environment of the young soldier or the changeableness of adolescence cannot be taken as conclusive evidence of future behavior. Such persons are still maturing and learning and can be influenced by the attitude of others and the realistic demands of the military situation.

ANOTHER advance in Army mental health is being made in the rehabilitation and utilization of individuals with epileptic disorders. Formerly such cases were promptly discharged from the service as soon as they could be identified. However, the past two decades have seen marked improvement in both the diagnosis and treatment of convulsive seizures.

Electroencephalographic apparatus, or so-called "brain wave" machines, have been developed, which permit a greater accuracy in the diagnosis of epilepsy, and new drugs have been produced which can prevent the occurrence of seizures in most cases. Still, the age-old prejudices and fears surrounding persons with convulsive seizures have made it difficult for the epileptic to obtain employment and assume a normal place in society.

Since World War II, military medicine has explored the possibilities of utilizing epileptics whose seizures are fully controlled by medication. Research in this sphere along with follow-up studies, particularly by the neuropsychiatric staff of the Fitzsimons Army Hospital, demonstrates that soldiers whose seizures are controlled can perform useful military service. Consequently, there has been a recent change in directives which permits the retention in the service of persons whose convulsive seizures are readily managed by standard drugs that are obtainable at all Army medical installations.

This practical approach to the utilization of the epileptic by the Army has proved realistic and has fostered a similar attitude toward these individuals in civil life.

IN THE EVENT of a major conflict in this age of atomic plenty, military medicine will be faced with the management of mass casualties on a scale greater than that experienced in conventional war-

fare. Part of the medical problem will consist of abnormal mental reactions due to the psychological impact of nuclear weapons.

This aspect of atomic warfare has been the subject of intensive study and research on behavior under catastrophic conditions, including the experiences of Hiroshima and Nagasaki, air strikes against populated centers during World War II, and civil disasters in this country due to fires, hurricanes, explosions, and the like.

From this data the following general conclusions can be stated:

¶ Mass panic under disaster conditions is relatively uncommon and occurs only when there is a narrowing or limited escape route, but one is believed to be open to safety. Under these circumstances, with individuals fleeing from danger and then finding their escape route jammed or blocked, there occurs the typical frantic, purposeless behavior of panic.

¶ Severe mental illness such as insanity or prolonged depression is not caused by external danger. Rather, such disorders result from internal psychological conflicts. There was no increase in insanity among the survivors of Hiroshima or Nagasaki, nor did such disorders occur from combat, civil disaster, or other danger situations.

¶ The common psychological problems observed under severe danger are temporary mental disruptions, identical with what has been observed in conventional battle and known as combat fatigue. These cases are self-limited, and improvement can be expected to begin with the end of danger.

THE prevention of these transient emotional disorders is dependent upon the assumption of purposeful action by the individual involved. Action drains fear, whereas inaction causes the damming back of tension, which increases to the degree that mental breakdown may occur.

It is obvious that a built-in pattern of behavior is necessary if prompt, purposeful activity is to be initiated as soon as possible after the atomic attack. Thus, training is the best prevention for preserving mental equilibrium under such circumstances.

Training should include measures to be taken during the warning period and the post-impact phase, as well as knowledge of the effects of nuclear weapons and the protective means that can be employed. It is envisioned that each man will be prepared to aid members of his unit who may be injured. Similarly, psychological first aid can be rendered to the temporarily stunned or helpless person who mainly needs guidance in resuming appropriate action.

Once the individual begins to move and act, fear diminishes, control is regained, and he can join with others in rescue efforts or reorganization for defense.

Thus in many vital phases of Army mental health, a vigorous and continuing research program is being conducted. Efforts in this sphere range from the investigation of the single nerve cell to the study of group reactions under the stress of battle. Such research efforts are of legitimate concern to the Army since the emotional stability of troops is of prime consideration in the effective accomplishment of the military mission.

Depots and convoys are links in the COMZ chain of supply

Delivering the Goods to USAREUR

Captain Ralph T. Hauert

RUMBLING ACROSS the French countryside, peaceful now with harvested fields lying bare in the sun, the huge truck convoys of the European Communications Zone (USAREUR COMZ) go rolling, much like the Red Ball Express of World War II fame, and bearing much the same cargo.

Today, however, they do not carry the supplies of war to embattled armies. Rather they carry supplies to American troops in Germany to insure that the French countryside—and all other countrysides—will remain peaceful. And if war should come, the Line of Communication maintained by USAREUR COMZ would be operationally ready to supply the troops.

It was essentially to establish such a Line of Communications that the Communications Zone was established in 1951. COMZ was designed to utilize the ports of France and an interior network of roads leading to Germany, rather than the port of Bremerhaven.

The hard facts of geography rendered the Bremerhaven LOC extremely vulnerable to incursions

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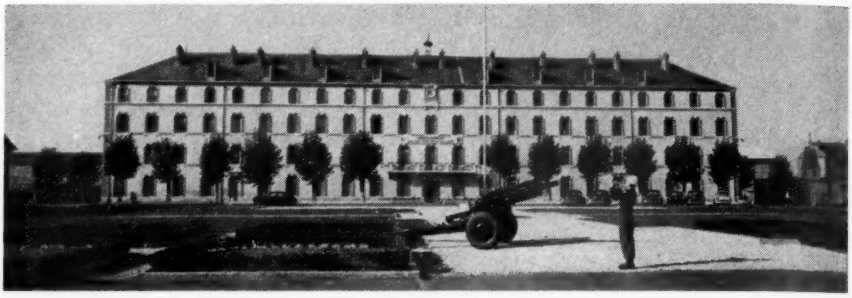


COMZ headquarters at Coligny Caserne, Orleans, was once the home of a famed French infantry regiment.

from the East. Such a line might be easily interdicted and the resisting troops cut off from ammunition, fuel and food. And without such sinews of war an army is, of course, merely a collection of men unable to fight.

Within five days of the time an agreement between United States and French representatives was signed on 6 November 1950, work on the new project was underway. Such swift action was due to advance planning of the EUCOM Logistics Division, which had been carried forward during the eleven months that it took to negotiate the agreement. Under its terms the United States was granted the right to develop support bases in France and to use certain French facilities.

Equipped with 300 trucks and 100 trailers, the 7966 EUCOM Detachment, forerunner of COMZ, with about 870 troops, rushed to Bordeaux and La Pallice which were to be used as major ports. Control points were set up on the rail routes to the Rhine, a depot was established at Captieux, and supplies were actually rolling by mid-November.

The work of establishing and maintaining the project was almost as difficult as under actual war conditions. The land at Captieux, for instance—some 36 square miles of it—had to be improved before construction could begin. Men of the various units lived in tents through the rainy cold of the French winter, in an area that was turned into an ocean of mud. The cost of living was high. Today conditions have improved. During 1955 about 2,000,000 square feet of permanent troop housing and a tenth of that in Bachelor Officers' Quarters have been constructed.

Family housing continues to be a problem, but the Rental Guarantee Housing Program, which makes locally constructed units available to Army families, is making considerable headway. In addition, storage and warehouse facilities have been improved. During the almost six years of operations, American troops have also constantly improved their relations with their French neighbors.

COMZ headquarters is located about 70 miles south of Paris, in Orleans, famous for the siege lifted by Joan of Arc. Four subordinate commands carry out the operational aspects of the COMZ mis-

sion. Base Section (BASEC) is located in the city of Poitiers in southwestern France. Advance Section (ADSEC) has headquarters in the famed fortress city of Verdun. Seine Area Command (SACZ) is in Paris, while Orleans installation (ORIN) is in Orleans.

From these areas move the skilled Transportation personnel to unload incoming materiel, the Quartermaster and Ordnance technicians who handle the supplies, the Signal Corps specialists who operate the hundreds of miles of telephone lines and the radio network that connects all points of the Command. About 17,000 French nationals are employed in the different installations.

By 1952 a systematic operational procedure had been placed in effect to expedite the movement of supplies. Two-way routes were worked out to simplify control and equalize outbound and inbound travel distances. Semi-trailers were used instead of trucks; thus a shuttle system allows the trailer vans to be moved by different tractor units, and drivers seldom are away from their home base for more than 48 hours.

Control over the transport system now comes under the 9th Highway Transportation Group, with Headquarters at Orleans, which functions as the highway transportation arm for the entire Zone.

CONVOYS usually start from Bussac or La Rochelle. The trailers are moved through Orleans or Toul—the latter a transfer point for German-bound traffic. Army and Air Force units in France are supplied by highway from Bussac, Orleans or Toul.

A trailer run from La Rochelle to Vogelweh, Germany, usually takes approximately five days. In emergency a shipment can be expressed through in 40 hours—but ordinarily a trailer load is left at some marshalling yard until a tractor from some advance point comes in with an empty trailer in exchange.

All along the line, close track is kept of each trailer by the Transportation Corps. It is logged in

Cargo swings shoreward along an aerial tramway from a Delong pier during Nodex 8, a logistical exercise conducted on the French coast.

Jet fuel is drained from drums into a tank truck for delivery to an Air Force Base.

and out of each marshalling point, so that headquarters always can know exactly where each unit is at any given time.

The route runs through historic areas—along the route the Moors followed in 732 before their defeat near Tours by Charles Martel, grandfather of Charlemagne; through the picturesque chateau country of the Loire; in the tank-marks of General Patton's Third Army; through Toul and Nancy, well-known to Yanks of World War I; past the site of Camp Norfolk where troops were processed for return to the United States in 1945; and so to Sarreguemines on the Saar border.

Actually these are the limits of USAREUR COMZ, but the job of keeping the materiel moving is passed on to U. S. troops in Germany. Crossing a frontier in peacetime, unlike during a war, calls for the proper papers, inspections, and so on. But the delays caused are very minor. Within a few hours after crossing into the Saar, the trailer is in Vogelweh, or at some other consigned destination.

But maintaining the warehouses and marshalling installations and keeping the goods moving is not all that COMZ troops do. They also are kept constantly busy at combat training. An example of such training is the over-the-beach unloading exercise termed NODEX. Units work around the clock during such an exercise, transferring cargoes from ships to shore, testing new methods of unloading, over-the-beach operations storage.

ALTHOUGH COMZ was placed in operation with incredible speed, considering the magnitude of the task involved, the complex organization was not hurriedly improvised to meet the demands of existing uncertain international conditions. Actually this is the third gigantic logistical organization set up in France in less than forty years. Today COMZ is following the trails blazed by two earlier organizations.

Prototype of the Communications Zone—the term did not come into official use until the Normandy invasion—was the Services of Supply (SOS) for the American Expeditionary Force in World War I.

Soon after the AEF was organized in the summer of 1917, it was found that the logistical system as originally constituted could not provide the required support for American units in the forward combat zones.

Location of every trailer unit en route through COMZ is charted at the headquarters control center.

Existing Field Service Regulations were intended essentially for small-scale military operations in the Western Hemisphere and the Philippines. These Regulations while providing for Base, Intermediate and Advance sections, did not give them central control over transportation, which with other matters of logistics was handled by the various staff divisions at General Headquarters.

Early in February 1918, General John J. Pershing appointed a board, headed by Colonel (later Brigadier General) Johnson Hagood, commanding officer of the first Advance Section, to study the problem and devise a more workable organization. This Board recommended that all procurement, supply, transportation and construction functions be placed under one coordinating head—to be known as the Commanding General of the Services of the Rear. This recommendation was accepted by Pershing but the designation soon was scrapped in favor of Services of Supply. First commander of the new organization was Major General Francis J. Kernan, who was shortly succeeded by Major General James G. Harbord, who remained in command until after the Armistice.

At its peak the World War I organization numbered about 700,000 men, operating a huge network of depots and installations. All in all, in terms of tonnages handled, men supplied, obstacles overcome, it accomplished the greatest logistical task any organization had been called upon to perform until that time.

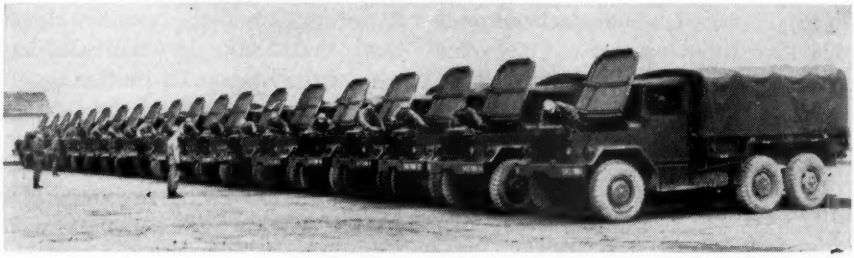
WHEN the country again was plunged into war in December 1941, United States troops were once more faced with the problem of fighting in distant lands, separated from the homeland by thousands of miles of ocean, menaced by hostile submarines.

A system consisting mainly of large supply bases was utilized in the Pacific Theater. But in Europe the situation was much the same as in 1918, and here logistics were organized along the World War I pattern. The old designation SOS was even used.

The SOS in the European Theater of Operations was first set up in the British Isles under command of Lieutenant General John C. H. Lee. Its main function at first was to stockpile supplies and prepare for mounting the cross-Channel attack. Not until sufficient supplies had been properly ac-

cumulated to back up an army on the continent was an invasion attempted. The military wisdom of this policy was borne out by the brilliant and rapid advances of the allied forces following D-Day.

In the wake of landings on Omaha and Utah Beaches, the Communications Zone was moved inland right behind the combat units. The port and beach activities, the spectacular operations of the Red Ball Express and the improvised pipeline that kept the American armies provided with fuel are probably the best known achievements of the World War II Communications Zone.



Vehicles are given a methodical check at Etain Transportation Center in COMZ Advance Section.

In the years immediately following World War II, United States troops in Germany and elsewhere in Europe were supplied mostly through Bremerhaven, by a Line of Communications running parallel to the West German border. The Berlin Airlift of 1948-49 and the precarious international situation following the invasion of Korea in 1950 focused attention on the entire system of supply. The present Communications Zone was the answer. Bremerhaven, incidentally, still is used as a major port for United States forces in Germany.

ALTHOUGH the organization and mission of COMZ are largely the same as those of World War I and its successor, there are some basic differences that necessitated pioneering in new fields. For one thing, military activities on the soil of sovereign nations by foreign armies in peacetime have few precedents in international relations. For another thing, the present COMZ was established to meet the uncertainties of the Cold War, rather than active hostilities.

As for the first factor, the tact, courtesy, common sense and excellent behavior of United States troops have allayed the fears and virtually wiped out all vestiges of criticism in some sections of the French population regarding the return of American soldiers so soon after the end of World War II. As for the second difference, it has not been difficult to gear the work of COMZ to peacetime conditions.

Today, keenly aware of its great responsibilities and of the important role it plays in the defense of the Free World, COMZ carries forward its mission of providing United States troops in the European Command with what they need in sufficient quantities and on time—whether in the present times of peace or in war, too, if that should come.

Keeping Current With

Books in Brief

A suggested reading list of recently published books of professional interest to U. S. Army personnel, active and reserve, prepared periodically by the Reference Section, Army Library.

Land and People in Nigeria, *by K. M. Buchanan and J. C. Pugh.* London, University of London Press, 1955. 252p.

Excellent maps and diagrams illustrate this text on the human and economic geography of Nigeria.

Lincoln's Choice, *by J. O. Buckeridge.* Harrisburg, Stackpole, 1956. 254p.

The importance of the seven-shooter used by the Northern Army during the Civil War.

Kuwait and Her Neighbors, *by H. R. P. Dickson.* London, George Allen & Unwin, 1956. 627p.

History and civilization of the peoples of Kuwait, Iraq and Saudi Arabia.

Lincoln Reconsidered, *by David Donald.* New York, Knopf, 1956. 200p.

An evaluation of two aspects of the Lincoln legend—the intellectual background of American sectionalism, and Lincoln's wartime leadership.

Russian Journey, *by William O. Douglas.* New York, Doubleday, 1956. 255p.

A record of Supreme Court Justice Douglas' travels and his observations on events, people and places in Russia.

World Alive; A Personal Story, *by Robert Dunn.* New York, Crown Publishers, 1956. 480p.

As a newspaper correspondent, adventurer and a lieutenant commander in the Navy, Robert Dunn covers a good part of the world and three wars.

Germany Reports. Bonn, 1955. 424p.

A record of the German Federal Government attainments since the collapse of the Third Reich in May 1945.

Strategic Intelligence and National Decisions, *by Roger Hilsman.* Glencoe, Illinois, Free Press, 1956. 187p.

History of American intelligence operations and the background of some of the doctrines of intelligence agencies.

Struggle for Asia, *by Sir Francis Low.* New York, Praeger, 1955. 239p.

A discussion and analysis of the workings of the Asian mind which must be taken into account in world affairs.

Korea's Heritage, *by Shannon McCune.* Rutland, Vermont, Charles E. Tuttle, 1956. 250p.

Korea's strategic location and importance in the Far East.

Land of the Crested Lion; A Journey Through Modern Burma, *by Ethel Mannin.* London, Jarrolds, 1955. 256p.

An informal account of travels through Burma.

The Rape of the Mind, *by Joost A. M. Meerloo.* Cleveland and New York, World Publishing Company, 1956. 320p.

The former Chief, Psychological Department, Netherlands Forces, and now instructor in psychiatry, Columbia University, discusses the problem of "brainwashing," how it is accomplished and how to build up defenses against mental and other tortures.

Soviet Encounter, *by Marius Adolphe Peltier.* London, Geoffrey Bles, 1955. 244p.

Observations based on four years in

the Soviet Union as Naval Attache to the French Embassy.

The Pakistani Way of Life, *by Ishtiaq Husian Qureshi.* Melbourne, William Heinemann, 1956. 81p.

Social, economic and political aspects of Pakistan are described by the Minister for Education in the Government of Pakistan.

Etiquette & Protocol, *by I. Monte Radlovic.* New York, Harcourt, Brace, 1956. 240p.

A handbook of conduct in American and international circles.

Sea War; The Story of the U. S. Merchant Marine in World War II, *by Felix Riesenberg.* New York, Rinehart, 1956. 320p.

An account of Merchant Marine activities throughout World War II.

Spy Stories from Asia, *by Kurt Singer.* New York, Funk, 1955. 336p.

Adventurous spy cases in modern Asia are graphically related in story form.

Eisenhower's Six Great Decisions: Europe 1944-45, *by Walter Bedell Smith.* New York, Longmans, Green, 1956. 237p.

The six decisive actions of General Eisenhower which most affected the winning of the European phase of World War II are reviewed by General Eisenhower's wartime Chief of Staff.

China and Soviet Russia, *by Henry Wei.* New York, Van Nostrand, 1956. 379p.

Significant diplomatic motives, tactics, setbacks and successes involved in the long course of Sino-Soviet relations.

Six Keys to the Soviet System, *by Bertram D. Wolfe.* Boston, Beacon Press, 1956. 258p.

A documented study of totalitarianism which has reached its full development in Soviet Russia.

New Weapons On Display

NINE new Army weapons were demonstrated recently at Aberdeen Proving Ground before members of the American Ordnance Association. The weapons included several of the Army's big missiles including the Honest John rocket, its brother Little John, and the Dart antitank guided missile. Other missiles shown but not fired were Redstone, Jupiter, Nike I, and Corporal.

Other items shown to the public for the first time included:

A 7.62-mm. machine gun, T161E3, a lightweight general purpose weapon developed to replace all three of the existing Army caliber .30 machine guns.

A 20-mm. A/C machine gun (Revolver) M39 which is a relatively lightweight, electrically fired, gas-operated gun firing an explosive projectile which bursts after penetrating the target.

The 30-mm. gun, automatic, T182, a revolver type weapon similar in design to the 20-mm. revolver, developed to meet an Air Force requirement.

The Vulcan, another 20-mm. gun, T171, specifically designed for present supersonic jet aircraft. This gun has "borrowed" features from the original Gatling Gun patented in 1862.

The 175-mm. Gun, T–45 representing the newest and one of the most versatile in field artillery pieces, incorporating battlefield capabilities in many respects superior to the combined features of the 155-mm. gun, the 8-inch howitzer and the 8-inch gun.

The 105-mm. mortar, T33E3, a smoothbore weapon having greater range and improved accuracy over preceding models.

The 90-mm. Gun, Tank, M48E1, a medium tank equipped with highly effective control equipment which permits maintaining the 90-mm. gun on target and firing while tank is in motion.

Not shown to the public was the Lacrosse, a new surface-to-surface guided missile for close support operations on the battlefield. This weapon is now in production.

What's New in

Training AIDs

Keep your organization current with the latest training materials by referring to this section in each issue.

TRAINING LITERATURE

While the following new literature will be published shortly, units are cautioned *NOT* to requisition copies until receipt of automatic initial distribution or the items are listed in DA Pamphlet 310–3.

105-mm. Howitzer M52, Self-Propelled. This new 6-series field manual is designed to assist commanders in developing the sections of 105-mm. howitzer M52, self-propelled, firing batteries into efficient, smooth-working teams that will operate effectively in battle.

Tactical Communications Center Operations. FM 11–17 presents methods and practices for planning, organizing, and operating a tactical communications center within a field army at army, corps, and division level. The new manual supersedes FM 24–17, September 1949.

Antiaircraft Artillery Missile Battalion, NIKE I. FM 44–( ) will present the principles and techniques employed to utilize fully the capabilities of the NIKE I antiaircraft guided missile system in an air defense role. The manual is divided into three parts—scheme of operation; battery and battalion organization, communications, logistics, reconnaissance, fire direction, and the like; and battery operations, radar and computer functions, and analysis of operation and fire. The overall manual is classified.

Duties of Antiaircraft Artillery and Guided Missile (SAM) Key Personnel. A Department of the Army Pamphlet (44–( )) will be published to assist the firing battery commander and other key personnel within the firing battery in specific duties pertaining to training and operations. Duties are listed to remind the individual what to do and when to do it. Information on *how* to do it will be found in appropriate field or technical manuals.

Military Petroleum Pipeline System: Maintenance (QM). A new technical manual (TM 10–1109) will be published for personnel concerned with first and second echelon maintenance of military petroleum pipeline systems.

Revisions: The following revised manuals are being readied for distribution:

FM 12–50, "The Marching Band"

FM 30–7, "Combat Intelligence, Regiment, Combat Command and Smaller Units." (A revision of FM 30–5, February 1951)

TM 9–1007, "Ordnance Maintenance: Materials Used for Cleaning, Preserving, Abrading, and Cementing Ordnance Materials." (A revision of TM 9–850, October 1951)

TM 9–1903, "Care, Handling, Preservation, and Destruction of Ammunition." (A partial revision of TM 9–1900, June 1945)

TM 9–3305–1, "Principles of Artillery—Weapons." (A partial revision of TM 9–2305, September 1947)

TRAINING AIDS

Training Films recently scheduled for distribution include:

Soviet Partisan Warfare. This 34-minute film (MF 30–8616) explains how Communist propaganda and indoctrination develop partisan spirit, and how partisan activity assists the Soviets in realizing their objectives. The film is one of a series to be used in instructing Regular Army and Reserve personnel on foreign armies of the world.

The Army Command and Administrative Network. This 20-minute film (TF 11–2317) explains the development, mission and operation of the Army Command and Administrative Network (ACAN)—the Army's highly integrated communication system designed to meet the increasing speed standards of the modern era. This film replaces TF 11–1648.

Profit and Loss in the Kitchen. This 18-minute color film (TF 10–2242) por-

trays desirable techniques of controlling waste in the kitchen by inspection of supplies, proper storage methods, use of leftovers.

Graphic Training Aids approved for distribution:

GTA 8–( ), Medical Service Forms, consists of 14 charts, each an enlarged reproduction of a standard form on black slate-like cloth, to permit student participation.

GTA 9–( ), Shell, HE, 155-mm. M 197B1. (New)

GTA 9–( ), Flash Reducer, M1. (New)

GTA 9–( ), Pyrotechnics. (New)

GTA 10–1, Classes of Supply. (Revision).

GTA 17–( ), Hand and Arm Signals, Armor. (New)

Devices. Former restrictions on the use of locally fabricated atomic blast demonstrators have been lifted, provided the instructions contained in a new Standing Operating Procedure published by Headquarters Continental Army Command are followed. There are now two approved atomic explosion devices:

a. Atomic Explosion Simulator (DVC 39–1), a fire-marker for quick emplacement in maneuvers (see page 44, March 1956 DIGEST.)

b. The locally fabricated demonstrator which provides a big "boom" for public demonstrations and in training, other than maneuvers.

ARMY EXTENSION COURSES

The following subcourses have been approved for publication by Headquarters Continental Army Command and are either new subcourses or major revisions.

Command and Staff—Logistics (40–13) 89. Quartermaster School. Functions and staff responsibilities of G4/S4; study of FM 101–10 and utilization of principal tables; problems and computations in organization, personnel, intelligence, operations, supply, evacuation and hospitalization, transportation and service; development of logistical estimate and plan; the administrative order.

Command and Staff Procedures and Intelligence, Subcourse 2. Ordnance School. Organization and function of S-sections; preparation of estimates, plans, orders, and reports; principles of military intelligence; functions of intelligence officers; terrain evaluation; sources of intelligence information; collection, processing and use of combat intelligence.

Training Exercises Underway

Results of Exercise Red Arrow conducted during November and December at Fort Riley, Kansas, now are being evaluated. A troop test on target location, as determined by Headquarters, Continental Army Command, was conducted in conjunction with the exercise. The 14,000 troops involved were from the 1st Infantry Division, with other selected smaller units from the Continental Army Command throughout the United States.

Designated Exercise Carib-Ex, a joint training exercise in amphibious and airborne training on coral beaches and in the deep jungles of the Panama Canal Zone will be staged in April. The exercise is part of the Defense Department's continuing program for training armed forces in military operations under different climatic conditions ranging from the Arctic to the tropics. More than 10,000 Army and Marine Corps troops, some 135 Marine and Air Force tactical and troop carrier aircraft, and about 24 Navy ships will participate. The two-phase exercise, lasting approximately five days, will include training in simulated atomic weapons.

A four-phase test of the streamlined 101st Airborne Division, formally activated last September to embody use of the most modern combat weapons and to permit greatest mobility, now is under way. Overall objective of the tests is to create situations which will permit evaluation of the new organization and its doctrinal concepts as compared to the current airborne division. Conditions of atomic warfare or of conventional warfare, under constant threat of nuclear weapons, will be employed through the entire period of the tests. Named "Jump Light," the four phases ending in March will be based on a theoretical airborne assault and will test component parts, but not the division as a whole.

PARAGRAPHS
from
The Pentagon and the Field

The 1956-57 series of National Resources Conferences, currently being conducted by the Industrial College of the Armed Forces at various cities throughout the country, is designed to foster a better understanding of the many problems associated with national security. The two-week sessions, held four hours a day, five days a week, are conducted by Army, Navy, Marine and Air Force officers from the faculty of the Industrial College. Meetings still to be conducted this year include Ventura, California, and Beaumont, Texas, 21 January to 1 February; Jacksonville, Florida, and Roanoke, Virginia, 18 February to 1 March; San Antonio, Texas, and Akron, Ohio, 18 March to 29 March; Hutchinson, Kansas, and Providence, Rhode Island, 15 April to 26 April; New York City, 6 May to 17 May; and San Diego, California, 13 May to 24 May.

A long-standing Army requirement for centralizing development and testing of new organizations, equipment and tactics will be realized with establishment of an Army Combat Developments Test and Experimentation Center at Fort Ord, California. Troops of the 10th Regimental Combat Team of the 5th Infantry Division will be used in the combat testing. It is expected that Technical Services also will make use of the new Center for experimentation and testing of new equipment.

The newly established Military Traffic Management Agency which began operation under the Army Chief of Transportation in October will direct and control traffic management functions for all military departments as they pertain to procurement, use, cost and control of transportation services required in peace and war for movement of military traffic by commercial transportation between points within the United States.

Designed to meet the needs of Army aviators, a global flight information service is being established by the Army Aviation Flight Information Division (AAFID) under the Chief Signal Officer to provide data on Army, National Guard and some civil airfields suitable for Army air operations. Field detachments are being set up at Heidelberg, Germany; Tokyo, Japan; Fort Amador, Canal Zone; and Fort Richardson, Alaska.

Five M–48 tanks have been especially adapted as live targets for firing demonstrations at The Infantry School. The tanks, considered among the safest in the Army, are shielded with additional armor to protect the drivers.

Registrars and allied medical record personnel from almost every Army hospital in the United States, Europe, Japan, Hawaii and Puerto Rico have received an intensive orientation in the new Army health record system that becomes effective 1 January. The new system provides a comprehensive medical history of each individual throughout his active duty military career. Each contact with the Army Medical Service is recorded in a folder which goes along with the soldier's service record whenever he changes station.

After completing a five months' course at the University of Virginia, 29 men who will become operators of the Army Package Power Reactor are now undergoing additional training in operation and maintenance of the facility. The reactor is being built at the Engineer Research and Development Laboratories, Fort Belvoir, Virginia, by Alco Products, Inc., under contract to Atomic Energy Commission.

Electronic marking devices developed at the Engineer Research and Development Laboratories, Fort Belvoir, Virginia, are making surface travel in the Arctic regions safer. Tested successfully on the Greenland ice cap, the markers consist of parallel wires buried under the snow. These form a trail that can guide a vehicle equipped with a radio-type receiver between the dangerous, snow-concealed crevasses. Warning devices sound an alarm when the vehicle crosses a wire and gets off the trail. (For other detection devices, see opposite.)

Official Notes

OVERSEA REPLACEMENTS. AR 612–20 provide methods for selection and assignment of oversea replacements into four-man teams during advanced individual training; they also provide for processing and movement of such teams (to be designated as carrier companies) to oversea commands for assignment to units as directed by the oversea commander.

FAMILY ASSISTANCE. AR 608–12 establish administrative procedures for extending prompt, courteous and efficient assistance to the next of kin and dependents of deceased and missing Army personnel in securing all Federal and other benefits to which they may be entitled.

FIELD OPERATIONS INTELLIGENCE. AR 614–46 establish procedure for submission and processing of applications for Field Operations Intelligence MOS training and assignment for commissioned, warrant officer, and enlisted personnel, and prescribe criteria governing selection of applicants for assignment to Feld Operations Intelligence duties.

ORGANIZATION MEETINGS. AR 1–211 set forth policies governing, and procedures to be followed to obtain, authorization for attendance at meetings of technical, scientific, professional and similar private organizations.

RESERVE OBLIGATIONS. AR 135–90 define the various service obligations incurred under the Universal Military Training and Service Act, as amended; describe the Ready Reserve participation requirements under the Armed Forces Reserve Act of 1952 as amended by the Reserve Forces Act of 1955; describe requirements established by the Acts pertaining to exemption and deferment from induction; and describe enforcement procedures in cases of failure by Army Reserve members to participate satisfactorily in required Ready Reserve duty training.

ASSIGNMENT AND REASSIGNMENT. AR 614–240 set forth conditions under which enlisted personnel may be reassigned between units of the Army, and establish procedures to be followed in processing individual requests for reassignment.

LOGISTIC SUPPORT. AR 700–32 prescribe a uniform policy for the provision of logistic support by the military departments to United States nongovernmental, nonmilitary agencies or individuals in oversea military commands. This includes military supplies, services, facilities, privileges and benefits.

OFFICER CANDIDATE SCHOOL. AR 140-50 prescribe the criteria and administrative procedures governing the program under which qualified personnel of the Army Reserve, not on active duty, may receive commissions as Reserve officers of the Army for service in the Army Reserve, through satisfactory completion of an Army officer candidate school course in an "active duty for training" status.

PERSONNEL SELECTION. AR 611–211 provide for identification, classification, requisitioning, assignment, and utilization of personnel who are qualified to perform scientific and professional level duties in such activities as research and development, instruction, and related work of a professional or scientific nature.

ARMY HELICOPTER PILOTS. AR 611–85 establish procedures for selection of volunteers for training as helicopter pilots.

Pathfinders for Ground Troops

TWO DEVICES aimed at providing greater safety, increased mobility and improved reconnaissance for troops in the field, have been announced. One is a tiny radar set which allows a front line soldier to "see with his ears" in dark, fog or smoke; the other is a jeep-mounted mine detector which automatically stops the vehicle when it locates a land mine.

ALREADY field-tested, the new super-miniature radar—self-contained in a drum-shaped 14 x 14 inch metal case, the entire assembly weighing only about 85 pounds—was developed and produced by Sperry Gyroscope Company working with the Signal Corps Engineering Laboratories and the Army Electronic Proving Ground.

By substituting audible signals for the cathode ray (picture) tube the tiny set produces distinctive sounds upon contact, at ranges up to three miles, with trucks, tracked vehicles, or individuals. Thus the operator can detect movement, the path of this motion, the probable nature of the moving objects, and also can secure elevation and range data. The device can detect a soldier walking half a mile away.

THE JEEP-MOUNTED DETECTOR is capable of finding mines buried in and along roadways. A search coil, protected by an immersion-proof rubber-coated plywood box, is kept at a constant height above the ground. When it passes over a mine, the vehicle is stopped instantly. A meter on the vehicle indicates the presence of the mine; panel lights change from green to red and an audible signal also is conveyed through earphones.

Developed by the Engineer Research and Development Laboratories, the detector and its carriage assembly weigh about 700 pounds. When not in operation, the apparatus is transported in carrying racks provided on the rear and one side of the jeep.

(For pictures of radar and mine detector devices, see back cover.)

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DEC 11 1956
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